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UTAH DIVISION OF  
SOLID & HAZARDOUS WASTE

07.02841



City of Logan  
2007 Class I Landfill  
Permit Renewal

September 14, 2007

## Utah Class I Permit Application Checklist

**Important Note:** The following checklist is for the permit application and addresses only the requirements of the Division of Solid and Hazardous Waste. Other federal, state, or local agencies may have requirements that the facility must meet. The applicant is responsible to be informed of, and meet, any applicable requirements. Examples of these requirements may include obtaining a conditional use permit, a business license, or a storm water permit. The applicant is reminded that obtaining a permit under the *Solid Waste Permitting and Management Rules* does not exempt the facility from these other requirements.

An application for a permit to construct and operate a landfill is the documentation that the landfill will be located, designed, constructed, and operated to meet the requirements of Rules R315-302, R315-303, R315-308, R315-309, and R315-315 of the *Utah Solid Waste Permitting and Management Rules* and the *Utah Solid and Hazardous Waste Act* (UCA 19-6-101 through 123). The application should be written to be understandable by regulatory agencies, landfill operators, and the general public. The application should also be written so that the landfill operator, after reading it, will be able to operate the landfill according to the requirements with a minimum of additional training.

Copies of the *Solid Waste Permitting and Management Rules*, the *Utah Solid and Hazardous Waste Act*, along with many other useful guidance documents can be obtained by contacting the Division of Solid and Hazardous Waste at 801-538-6170. Most of these documents are available on the Division's web page at [www.hazardouswaste.utah.gov](http://www.hazardouswaste.utah.gov). Guidance documents can be found at the solid waste section portion of the web page.

When the application is determined to be complete, the original complete application and one copy of the complete application are required along with an electronic copy.

### Part II Application Checklist

<b>I. Facility General Information</b>	
Description of Item	Location In Document
Completed Part I General information	Part I
General description of the facility (R315-310-3(1)(b))	Part II, Section 1
Legal description of property (R315-310-3(1)(c))	Part II, Section 2
Proof of ownership, lease agreement, or other mechanism (R315-310-3(1)(c))	Appendix F
Area served by the facility including population (R315-310-3(1)(d))	Part II, Section 1.3
If the permit application is for a class I landfill a demonstration that the landfill is not a commercial facility	Part II, Section 2
Waste type and anticipated daily volume (R315-310-3(1)(d))	Appendix D
Intended schedule of construction (R315-302-2(2)(a))	Part III, Section 4
Name and address of all property owners within 1000 feet of the facility boundary (R315-310-3(2)(i))	NA – Existing Facility
Documentation that a notice of intent to apply for a permit has been sent to all property owners listed above (R315-310-3(2)(ii))	NA – Existing Facility
Name of the local government with jurisdiction over the facility site (R315-310-3(2)(iii))	NA – Existing Facility
Demonstration That The Facility Meets The Location Standards (R315-302-1)	
Land use compatibility	Part III, Section 3.1

## Utah Class I Permit Application Checklist

<b>I. Facility General Information</b>	
Description of Item	Location In Document
Maps showing the existing land use, topography, residences, parks, monuments, recreation areas or wilderness areas within 1000 feet of the site boundary	Appendix A
Certifications that no ecologically or scientifically significant areas or endangered species are present in site area	Part III, Section 3.1
List of airports within five miles of facility and distance to each	Logan-Cache (4mi)
Geology	
Geologic maps showing significant geologic features, faults, and unstable areas	Part III, Section 2 (no maps available)
Maps showing site soils	Part III, Section 2 (no maps available)
Surface water	
Magnitude of 24 hour 25 year and 100 year storm events	Part III, Section 3.5
Average annual rainfall	16.65" total precipitation (KVNU Station)
Maximum elevation of flood waters proximate to the facility	Part III, Section 2.3
Maximum elevation of flood water from 100 year flood for waters proximate to the facility	Part III, Section 2.3
Wetlands	Part III, Section 3.14
Ground water	Part III, Section 3.15
<b>Plan of Operations (R315-310-3(1)(e) and R315-302-2(2))</b>	
Forms and other information as required in R315-302-2(3) including a description of on-site waste handling procedures and an example of the form that will be used to record the weights or volumes of waste received (R315-302-2(2)(b) And R315-310-3(1)(f))	Appendix G
Schedule for conducting inspections and monitoring, and examples of the forms that will be used to record the results of the inspections and monitoring (R315-302-2(2)(c), R315-302-2(5)(a), and R315-310-3(1)(g))	Part II, Section 3.4 Appendix G
Contingency plans in the event of a fire or explosion (R315-302-2(2)(d))	Part II, Section 3.5
Corrective action programs to be initiated if ground water is contaminated (R315-302-2(2)(e))	Part II, Section 3.5
Contingency plans for other releases, e.g. explosive gases or failure of run-off collection system (R315-302-2(2)(f))	Part II, Section 3.5
Plan to control fugitive dust generated from roads, construction, general operations, and covering the waste (R315-302-2(2)(g))	Part II, Section 3.8
Plan for litter control and collection (R315-302-2(2)(h))	Part II, Section 3.8
Description of maintenance of installed equipment (R315-302-2(2)(i))	Part II, Section 3.7
Procedures for excluding the receipt of prohibited hazardous or PCB containing wastes (R315-302-2(2)(j))	Part II, Section 3.3

## Utah Class I Permit Application Checklist

<b>I. Facility General Information</b>	
Description of Item	Location In Document
Procedures for controlling disease vectors (R315-302-2(2)(k))	Part II, Section 3.8
A plan for alternative waste handling (R315-302-2(2)(l))	Part II, Section 3.6
A general training and safety plan for site operations (R315-302-2(2)(o))	Part II, Section 3.16
Any recycling programs planned at the facility (R315-303-4(6))	Part II, Section 3.9
Closure and post-closure care Plan (R315-302-2(2)(m))	Part III, Section 4 & 5
Procedures for the handling of special wastes (R315-315)	Part II, Section 3.2
Plans and operation procedures to minimize liquids (R315-303-3(1)(a) and (b))	Part II, Section 3.2
Plans and procedures to address the requirements of R315-303-3(7)(c) through (i) and R315-303-4	Part II, Section 3
Any other site specific information pertaining to the plan of operation required by the Executive Secretary (R315-302-2(2)(p))	Part II, Section 3
<b>SPECIAL REQUIREMENTS FOR A CLASS V LANDFILL (R315-310-3(2))</b>	
Submit information required by the <i>Utah Solid and Hazardous Waste Act</i> Subsections 19-6-108(9) and 19-6-108(10) (R315-310-3(2)(a))	NA
Approval from the local government within which the solid waste facility sits	NA

<b>II Facility Technical Information</b>	
Description of Item	Location In Document
<b>Maps</b>	
Topographic map drawn to the required scale with contours showing the boundaries of the landfill unit, ground water monitoring well locations, gas monitoring points, and the borrow and fill areas (R315-310-4(2)(a)(i))	Appendix A
Most recent U.S. Geological Survey topographic map, 7-1/2 minute series, showing the waste facility boundary; the property boundary; surface drainage channels; any existing utilities and structures within one-fourth mile of the site; and the direction of the prevailing winds (R315-310-4(2)(a)(ii))	Appendix A
<b>Geohydrological Assessment (R315-310-4(2)(b))</b>	
Local and regional geology and hydrology including faults, unstable slopes and subsidence areas on site (R315-310-4(2)(b)(i))	Part III, Section 2
Evaluation of bedrock and soil types and properties including permeability rates (R315-310-4(2)(b)(ii))	Part III, Section 2
Depth to ground water (R315-310-4(2)(b)(iii))	Part III, Section 2
Direction and flow rate of ground water (R315-310-4(2)(b)(iv))	Part III, Section 2
Quantity, location, and construction of any private or public wells on-site or within 2,000 feet of the facility boundary (R315-310-4(2)(b)(v))	Part III, Section 2

## Utah Class I Permit Application Checklist

<b>// Facility Technical Information</b>	
<b>Description of Item</b>	<b>Location in Document</b>
Tabulation of all water rights for ground water and surface water on-site and within 2,000 feet of the facility boundary (R315-310-4(2)(b)(vi))	Part III, Section 2
Identification and description of all surface waters on-site and within one mile of the facility boundary (R315-310-4(2)(b)(vii))	Part III, Section 2
Background ground water and surface water quality assessment and, for an existing facility, identification of impacts upon the ground water and surface water from leachate discharges (R315-310-4(2)(b)(viii))	Part III, Section 2
Ground Water Monitoring (R315-303-3(7)(b) and R315-308)	Part III, Section 3.4
Statistical method to be used (R315-308-2(7))	Part III, Section 3.5
Calculation of site water balance (R315-310-4(2)(b)(ix))	Part III, Section 2.6
<b>ENGINEERING REPORT - PLANS, SPECIFICATIONS, AND CALCULATIONS</b>	
Documentation that the facility will meet all of the performance standards of R315-303-2	Part III, Section 3
Engineering reports required to meet the location standards of R315-302-1 including documentation of any demonstration or exemption made for any location standard (R315-310-4(2)(c)(i))	Part III, Section 3
Anticipated facility life and the basis for calculating the facility's life (R315-310-4(2)(c)(ii))	Part III, Section 3.2
Cell design to include liner design, cover design, fill methods, elevation of final cover including plans and drawings signed and sealed by a professional engineer registered in the State of Utah (R315-303-3(3), R315-303-3(6) and (7)(a), R315-310-3(1)(b) and R315-310-4(2)(c)(iii))	Part III, Section 3
Leachate collection system design and calculations showing system meets the requirements of R315-303-3(2)	Part III, Section 3.4
Equipment requirements and availability (R315-310-4(2)(c)(iii))	Part II, Section 1.5
Identification of borrow sources for daily and final cover and for soil liners (R315-310-4(2)(c)(iv))	Part III, Section 3.3
Run-On and run-off diversion designs (R315-303-3(1)(c), (d) and (e))	Part III, Section 3.5
Leachate collection, treatment, and disposal and documentation to show that any treatment system is being or has been reviewed by the Division of Water Quality (R315-310-4(2)(c)(v) and R315-310-3(1)(i))	Part III, Section 3.4 , Appendix I
Ground water monitoring plan that meets the requirements of Rule R315-308 including well locations, design, and construction (R315-310-4(2)(b)(x) and R315-310-4(2)(c)(vi))	Appendix C
Landfill gas monitoring and control plan that meets the requirements of Subsection R315-303-3(5) (R315-310-4(2)(c)(vii))	Appendix J
Slope stability analysis for static and under the anticipated seismic event for the facility (R315-310-4(2)(b)(i) and R315-302-1(2)(b)(ii))	Part III, Section 3.1.2.3

## Utah Class I Permit Application Checklist

<b>// Facility Technical Information</b>	
Description of Item	Location In Document
Design and location of run-on and run-off control systems (R315-310-4(2)(c)(viii))	Part III, Section 3.5; Appendix A
<b>CLOSURE PLAN (R315-310-3(1)(h))</b>	
Closure Plan (R315-302-3(2) and (3))	Part III, Section 4
Post-Closure Plan (R315-302-3(5) and (6))	Part III, Section 5
Closure schedule (R315-310-4(2)(d)(i))	Part III, Section 4
Design of final cover (R315-303-3(4) and R315-310-4(2)(c)(iii))	Part III, Section 3.3
Capacity of site in volume and tonnage (R315-310-4(2)(d)(ii))	Part III, Section 3.2
Final inspection by regulatory agencies (R315-310-4(2)(d)(iii))	Part III, Section 4
<b>POST-CLOSURE CARE PLAN (R315-310-3(1)(h))</b>	
Site monitoring of landfill gases, ground water, and surface water, if required (R315-310-4(2)(e)(i))	Part III, Section 5
Changes to record of title, land use, and zoning restrictions (R315-310-4(2)(e)(ii))	Part III, Section 5
Maintenance activities to maintain cover and run-on/run-off control systems (R315-310-4(2)(e)(iii))	Part III, Section 5
List the name, address, and telephone number of the person or office to contact about the facility during the post-closure care period (R315-310-4(2)(e)(vi))	Part III, Section 5
<b>FINANCIAL ASSURANCE (R315-310-3(1)(j))</b>	
Identification of closure costs including cost calculations (R315-310-4(2)(d)(iv)) and (R315-302-2(2)(n))	Part III, Section 7
Identification of post-closure care costs including cost calculations (R315-310-4(2)(e)(iv))	Part III, Section 7
Identification of the financial assurance mechanism that meets the requirements of Rule R315-309 and the date that the mechanism will become effective (R315-309-1(1))	Part III, Section 7

## **ANNOTATED TABLE OF CONTENTS**

### **Part**

### **Title**

#### **Introduction**

Includes summary of permit with technical and operational issues highlighted

#### **I.**

#### **General Data**

Includes State of Utah Solid Waste Permit Application form

#### **II.**

#### **General Report**

Includes general facility information required by Utah Administrative Rule R315-301 through R315-310

#### **III.**

#### **Technical and Engineering Report**

Includes operational and technical information required by Utah Administrative Rule R315-301 through R315-310

## **APPENDICES**

APPENDIX A – Drawings

APPENDIX B – City of Logan Sanitary Landfill Operations Plan (Table of contents only)

APPENDIX C – Groundwater Monitoring Plan (Table of contents only)

APPENDIX D – Annual Report

APPENDIX E – Logan Five-Year Solid Waste Management Plan (Table of contents only)

APPENDIX F – Proof of Land Ownership

APPENDIX G – Landfill Forms

APPENDIX H – Stormwater (Run-On / Run-Off)

APPENDIX I – UPDES

APPENDIX J – Title V Permit

APPENDIX K – Geologic / Geotechnical Data

APPENDIX L – Water Rights (Points of Diversion)

APPENDIX M – Site Water Balance

APPENDIX N – Slope Stability

APPENDIX O – Landfill Life

APPENDIX P – Closure / Post Closure Costs

## INTRODUCTION

This document presents an application to renew a permit to operate solid waste disposal facilities at the Logan City Sanitary Landfill, which is owned and operated by the Logan City Corporation. The Logan City Sanitary Landfill is currently operated under permit number 9432 issued by the Utah Solid and Hazardous Waste Control Board.

In the four and one half years that have passed since the current permit was issued to the Logan City Sanitary Landfill, minimal changes have taken place. The minor modifications to the existing operation are as follows:

- Landfill Life – The landfill life calculations including all assumptions were updated and a recent survey performed to provide a more accurate estimation of in place waste at the landfill. The historic waste-stream records were converted into a waste volume and estimates were made for soil use. Minor changes in final cover topography and the updating of landfill consumption rate have changed the landfill life slightly.
- Phases of Landfilling – The filling sequence of the Logan City Sanitary Landfill (The landfill) will be modified from the existing permit. The changes will bring the area of the landfill closest to residential areas to final grade first. This will allow for a timely closure of that portion of the landfill, providing a visual barrier to ongoing landfill operations.

The following items, which have been previously permitted and or included in prior submittals to the State of Utah, Department of Environmental Quality, Division of Solid and Hazardous Waste (DSHW), are part of the operating record of the landfill, and will not be discussed in detail in this permit application:

- Operations Plan – The Logan City Sanitary Landfill Operations Manual dated March 2003, by James M. Montgomery Consulting Engineers, Inc. contains detailed operational practices and is not included in the permit document. The items of interest (items that specifically pertain to the permit) are included in Part II Section 3. The detailed Logan City Sanitary Landfill Operations Manual will be modified to reflect all operational modifications that have occurred since the last revision of the Operations Manual and the information contained in this permit application.

- Landfill liner system – No expansion of the landfill footprint for the disposal of Municipal Solid Waste is proposed; therefore, the existing liner exemption will not need to be reexamined.
- Leachate collection and removal system – No new leachate collection facilities are propose to be installed; therefore, the existing leachate collection procedures will not be modified.
- Groundwater Monitoring Plan – No additions or modifications to the existing groundwater monitoring program are planned; therefore, the existing Groundwater Monitoring Plan (Kleinfelder, 1998) will not be modified.

The application has been organized to follow the general outline of R315-302 and R315-310. This organization results in some duplication and repetition of information, but it is intended to simplify the review and approval of the permit application.

Part I of this document duplicates the standard form outlining general data pertaining to the site.

Part II is a general report that includes a facility description, truncated version of the comprehensive Operations Plan, and updated facility information as presented in the 2006 Annual Landfill Report.

Part III is the Technical Report and includes the following:

- Geohydrological Assessment.
- Engineering Report.
- Updates to the existing Closure Plan
- Updates to the existing Post-Closure Care Plan
- Updates to the existing Financial Assurance Plan

APPLICATION TO RENEW A PERMIT TO  
OPERATE A CLASS I LANDFILL

- City of Logan

**PART I - GENERAL DATA**

# Utah Class I and V Landfill Permit Application Form

<b>Part I General Information</b> <b>APPLICANT: PLEASE COMPLETE ALL SECTIONS.</b>									
<b>I. Landfill Type</b>		<input checked="" type="checkbox"/> Class I <input type="checkbox"/> Class V		<b>II. Application Type</b>		<input type="checkbox"/> New Application <input checked="" type="checkbox"/> Renewal Application		<input type="checkbox"/> Facility Expansion <input type="checkbox"/> Modification	
For Renewal Applications, Facility Expansion Applications and Modifications Enter Current Permit Number <u>9432</u>									
<b>III. Facility Name and Location</b>									
Legal Name of Facility Logan City Sanitary Landfill									
Site Address (street or directions to site) 1400 West 200 North						County Cache			
City      Logan			State      UT	Zip Code      84321		Telephone      (435) 716-9752			
Township    12 N	Range      1 E	Section(s)    32		Quarter/Quarter Section		Quarter Section			
Main Gate Latitude      degrees      minutes      seconds		Longitude      degrees      minutes      seconds							
<b>IV. Facility Owner(s) Information</b>									
Legal Name of Facility Owner City of Logan									
Address (mailing) 255 North Main									
City      Logan			State      UT	Zip Code    84321		Telephone    (435) 716-9000			
<b>V. Facility Operator(s) Information</b>									
Legal Name of Facility Operator City of Logan									
Address (mailing) 255 North Main									
City      Logan			State      UT	Zip Code    84321		Telephone    (435) 716-9000			
<b>VI. Property Owner(s) Information</b>									
Legal Name of Property Owner City of Logan									
Address (mailing) 255 North Main									
City      Logan			State      UT	Zip Code    84321		Telephone    (435) 716-9000			
<b>VII. Contact Information</b>									
Owner Contact    Issa Hamud				Title      Environmental Director					
Address (mailing) 1000 West 450 North									
City      Logan			State      UT	Zip Code    84321		Telephone    (435) 716-9752			
Email Address    ihamud@loganutah.org				Alternative Telephone (cell or other)		(435) 716-9755			
Operator Contact    Issa Hamud				Title      Environmental Director					
Address (mailing) 1000 West 450 North									
City      Logan			State      UT	Zip Code    84321		Telephone    (435) 716-9752			
Email Address    ihamud@loganutah.org				Alternative Telephone (cell or other)		(435) 716-9755			
Property Owner Contact    Issa Hamud				Title      Environmental Director					
Address (mailing) 1000 West 450 North									
City      Logan			State      UT	Zip Code    84321		Telephone    (435) 716-9752			
Email Address    ihamud@loganutah.org				Alternative Telephone (cell or other)		(435) 716-9755			

# Utah Class I and V Landfill Permit Application Form

## Part I General Information (Continued)

### II. Waste Types (check all that apply)

All non-hazardous solid waste (see R315-315-7(3) for PCB special requirements) OR the following specific waste types:

Waste Type	Combined Disposal Unit	Monofill Unit
<input checked="" type="checkbox"/> Municipal Waste	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Construction & Demolition	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Industrial	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Incinerator Ash	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Animals	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Asbestos	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> PCB's (R315-315-7(3) only)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Other _____	<input type="checkbox"/>	<input type="checkbox"/>

### IX. Facility Area

Facility Area.....	<u>350+</u>	acres
Disposal Area.....	<u>85</u>	acres
Design Capacity		
Years.....	<u>17</u>	
Cubic Yards.....	<u>8,397,716</u>	
Tons.....	<u>6,011,732</u>	

## X. Fee and Application Documents

Indicate Documents Attached To This Application

☐ Application Fee: Amount \$

Class V Special Requirements

- ☒ Facility Map or Maps   
 ☒ Facility Legal Description   
 ☒ Plan of Operation   
 ☒ Waste Description  
☒ Ground Water Report   
☒ Closure Design   
☒ Cost Estimates   
☒ Financial Assurance

☐ Documents required by UCA 19-6-108(9) and (10)

I HEREBY CERTIFY THAT THIS INFORMATION AND ALL ATTACHED PAGES ARE CORRECT AND COMPLETE.

Signature of Authorized Owner Representative

*Randy Watts*  
RANDY WATTS  
 Name typed or printed

Title

Mayor

Date

9/20/07

Address

255 N Main Logan, ut 84321

Signature of Authorized Land Owner Representative (if applicable)

*Randy Watts*  
RANDY WATTS  
 Name typed or printed

Title

Mayor

Date

255 N Main Logan, ut 84321

Address

255 N Main Logan, ut 84321

Signature of Authorized Operator Representative (if applicable)

*Issa A. Hamud*  
Issa A. Hamud  
 Name typed or printed

Title

Director

Date

9/20/07

Address

450 N 1000 W Logan, ut 84321

**APPLICATION TO RENEW A PERMIT TO  
OPERATE A CLASS I LANDFILL**

**City of Logan**

**PART II - GENERAL REPORT**

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## **SECTION 1 – FACILITY DESCRIPTION**

### **1.1 LOCATION**

The Logan City Sanitary Landfill (Logan Landfill) is an existing Class I landfill seeking a permit renewal. The Logan Landfill currently operates under permit number 9432 as issued by the Utah Department of Environmental Quality, Division of Solid and Hazardous Waste (DSHW).

The landfill is located in the southeast quarter of Section 31 and the southwest quarter of Section 32, Range 1 East, Township 12 North, Salt Lake Base and Meridian. Access is south 0.2 miles from Highway 30 at a point approximately 1.8 miles west of Highway 89 and 91 in the center of Logan City. The general location is shown in Drawing 1, Appendix A.

### **1.2 GENERAL INFORMATION**

This landfill has served Logan City since 1960 and all of Cache County since 1974. This existing waste deposit occupies approximately 90 acres. Waste placement at the landfill uses the area fill method. The 90 acre area has been excavated approximately 6 to 8 feet below the original ground line. The elevation of waste deposits above the original ground line varies from approximately 6 to 70 feet. Immediately adjacent to the Municipal Solid Waste (MSW) disposal area Logan City operates an approximately 5 acre dedicated Construction and Demolition (C&D) area.

The soil beneath the landfill consists of a thick layer of highly plastic clay having a vertical permeability of  $10^{-7}$  to  $10^{-8}$  cm/sec in its natural state. No synthetic or engineered soil barrier is in place under existing waste deposits; however, the low-permeability clays beneath the waste deposits impede vertical seepage and confine underlying water-bearing zones and aquifers.

The top surface of the landfill is generally flat, with perimeter side slopes of about 4 horizontal to 1 vertical. Slopes between areas of the landfill at different elevations are generally connected with slopes of 4:1 or less. Beginning in 1993, the MSW and the C&D waste have been placed and covered in accordance with the original Logan City Sanitary Landfill Operations Plan (JMM, 1992). Appendix B includes the Table of Contents for the

comprehensive Logan City Sanitary Landfill Operations Plan. The entire Logan City Sanitary Landfill Operations Plan is not included in this permit renewal. Groundwater monitoring facilities are in place and a groundwater and surface water monitoring program is in effect. All groundwater monitoring activities are performed in accordance with the existing Groundwater Monitoring Plan (Kleinfelder, 1998). Appendix C includes the table of contents for the Groundwater Monitoring Plan.

### **1.3 AREAS SERVED BY THE FACILITY**

The Logan Landfill serves all of Cache County including each of the political subdivisions of the State of Utah (State) that are located in the county are included. These political subdivisions include 19 cities and towns and the unincorporated area of the county. Names of these political subdivisions are provided below:

#### **Areas Served by the Logan Landfill**

Amalga	Lewiston	Nibley	River Heights
Clarkston	Logan	North Logan	Smithfield
Cornish	Mendon	Paradise	Trenton
Hyde Park	Millville	Providence	Wellsville
Hyrum	Newton	Richmond	Unincorporated County

Waste collection and disposal in Cache County is administered by the Cache County Service Area No. 1 (service area). This service area, by virtue of interlocal agreements signed by each participating community, is empowered to collect and dispose of all municipal solid waste in the county. On June 18, 1974 the service area contracted with Logan City Corporation to provide collection and disposal service for all of the cities within Cache County.

The Logan Landfill is not a for-profit landfill. All funds generated by the landfilling tipping fees are reinvested into the landfill facilities or other waste related activities according to governing rules for the operation of a landfill facility.

## **1.4 WASTE TYPES**

The Logan City Sanitary Landfill receives the following waste materials:

- Municipal Solid Waste, which includes Household Waste and Commercial Solid Waste.
- Industrial Solid Waste (non-hazardous).
- Special Waste in accordance with Rule R315-315.
- Infectious Waste in accordance with Rule R315-316.

A summary of the types and volumes of wastes processed at the Logan Landfill are presented in the most recent annual report for the facility which is included in Appendix D.

Waste composition and quantity projections, reviews of the solid waste collections, green waste operations, and other waste related program trends for Cache County are presented in the Logan Five-Year Solid Waste Management Master Plan (LBA Associates, 2005). A Table of Contents of this Plan is contained in Appendix E. The entire Logan Five-Year Solid Waste Management Plan is not included in this permit renewal.

## **1.5 LANDFILL EQUIPMENT**

Equipment operating at the landfill is owned and operated by Logan City. The following equipment is permanently assigned to the landfill:

- 2 Crawler Dozers
- 1 Trash Compactor
- 1 Supervisory Utility Vehicle
- 1 Materials Transport Dump Truck
- 1 Scrapers

The following equipment, which is owned and operated by Logan City, is assigned to the landfill on an as-needed basis:

- 1 Water Truck
- 1 Road Grader
- 1 Equipment Maintenance Vehicle

- 1 Water Truck (Street and Water Departments)
- 1 Road Grader (Street Department)
- 1 Equipment Maintenance Vehicle (Shops Department)

Fire fighting equipment is available through the Logan City and Cache County Fire Departments. During periods of major overhaul or extended breakdown, replacement equipment is rented locally.

## 1.6 LANDFILL PERSONNEL

The following persons are responsible for on-site landfill operations at the Logan Landfill:

Director of Solid Waste Management (Director) – The Director is responsible for all matters relating to the solid waste program for the Logan Landfill. These matters include; landfill operations, transfer stations and all recycling functions. The Director is responsible for the landfill meeting all DSHW permit requirements. The Director conducts regular facility inspections and monitors all landfill activities. The Director is responsible for all operational documentation including the preparation of the annual reports to DSHW.

Landfill Manager (Manager) – The Manager is responsible for all day-to-day landfill activities. Daily responsibilities include road maintenance, general site access and site safety. The Manager is also responsible for all persons working or visiting the landfill. Additional responsibilities include the maintenance and oversight of the groundwater monitoring, and daily, intermediate, and final cover.

Equipment Operators (Operators) – The Operators are responsible for all day-to-day activities at the landfill. These responsibilities include; waste acceptance, waste placement, traffic control, safe operation and maintenance of all equipment, visual inspection of incoming waste, random waste screening operations and general construction as it pertains to landfill operations.

This position requires at least 2-years experience in the operation and maintenance of heavy equipment. Operators must possess a Commercial Drivers License.

Landfill Attendants (Attendants) – The Attendants are responsible for the initial screening of all incoming waste. The Attendants track all incoming waste and update landfill records as

required. The Attendants are also responsible for all transactions at the scale house, and the receipt of all monies. Additionally, the Attendants assist the Manager and Director in the preparation of the annual landfill reports.

This position requires a good working knowledge of computers with a minimum of one-year experience in office management.

## **SECTION 2 - LEGAL DESCRIPTION AND PROOF OF OWNERSHIP**

All properties used for the disposal of waste and supporting functions are owned by Logan City, a municipal corporation operating under the laws of the State of Utah. Additional properties have been acquired to facilitate modifications to run-off, run-on, and access control facilities.

### **2.1 LEGAL DESCRIPTION**

The following description identifies the limits of waste deposits at the Logan City Sanitary Landfill:

Commencing south a distance of 7.00 feet east a distance of 5.00 feet from the southwest quarter of the southeast quarter of Section 31 situated in Township 12 North, Range 1 East of the Salt Lake Base and Meridian and running thence:

South 88°24'45" east 649.75 feet; thence south 015°35" west 331.00 feet; thence south 88°17'25" east, 1,340.60 feet; thence south 1°44'47" west 328.15 feet; thence south 89°09'00" east 674.07 feet; thence south 640.00 feet; thence south 2°40'38" west 278.30 feet; thence north 89°05'45" west 887.11 feet; thence south 24°10'45" west 375.99 feet; thence north 80°56'00" west 95.19 feet; thence north 46°50'51" west 438.63 feet; thence south 87°22'50" west 202 feet; thence south 45° west 70.71 feet; thence south 76°05'15" west 224.59 feet; thence south 46°33'47" west 440.69 feet; thence north 88°38'39" west 338.09 feet; thence south 70°40'46" west 186.19 feet; thence north 75°32'18" west 166.58 feet; thence north 0°49'09" east 2,028.21 feet to the point of beginning.

### **2.2 PROOF OF OWNERSHIP**

Appendix F provides copies of all deeds.

## **SECTION 3 – OPERATIONS PLAN**

This Operations Plan has been written to address the requirements of UAC R315-302-2 and briefly describes the operations of the Logan Landfill.

A more extensive document titled City of Logan Sanitary Landfill Operations Manual contains detailed information regarding specific operating procedures that apply to the entire solid waste, recycling and composting activities. The purpose of the manual is to provide the Manager and operating personnel with standard procedures for day-to-day operation of the landfill. A copy of this manual is kept on file at the landfill.

The function of the Logan Landfill is to provide for the sanitary disposal of municipal solid wastes generated by the citizens of Cache County. The landfill is operated in accordance with the Utah Solid and Hazardous Wastes Committee Rules R315-301 through 320. This landfill will also be operated as a municipal solid waste landfill as defined in Section 258.2 of EPA regulation (40 CFR 258 August 30, 1988).

### **3.1 SCHEDULE OF CONSTRUCTION**

Currently operations at the Logan Landfill are occurring in the south west corner of the landfill (MSW operation), and at the north side of the landfill (C&D operation). All landfill operations consist of the importing, compacting, and covering of wastes with soil. All materials brought to the landfill are being disposed at or above original surface elevations. The majority of the 95 acre (90 acres of MSW and 5 acres of C&D) waste footprint has been covered with at least one level of disposed material. There are no plans to expand the landfill footprint (lateral expansion) therefore all landfill will occur only in areas previously permitted.

Soil is utilized as the primary cover material on both the C&D and the MSW working faces. Soil is imported in from sources outside the landfill boundaries. Some soil comes from

overburden from construction projects around the Cache Valley area with the majority of cover soil imported from property west of the landfill. The property west of the landfill is owned by Logan City and is being converted to a planned wetland by the removal of soil for landfill use. Soil excavated in the wetland development is excavated during the summer months when the ground is dry enough to work and hauled to the landfill for use during the year.

### **3.2 WASTE STREAM MANAGEMENT - DESCRIPTION OF HANDLING PROCEDURES**

#### **3.2.1 General**

A waste control program designed to detect and deter attempts to dispose of hazardous and other unacceptable wastes will continue to be implemented at the Logan Landfill. The program is designed to protect the health and safety of employees, customers, and the general public, as well as to protect against the contamination of the environment.

The landfill is open for public and private disposal. Signs posted near the landfill entrance clearly indicate (1) the types of wastes that are accepted; (2) the types of wastes not accepted at the site; and (3) the penalty for illegal disposal.

The following procedures are practiced at the Logan Landfill to deter disposal of hazardous and unacceptable waste. All waste entering the facility must stop at the scale house. The scale house is operated by at least one scale house attendant. The scale house attendant asks the waste hauler what kind of waste they are bringing to the landfill and whether there are any tires, batteries, used oil, paint, computer monitors or refrigerators in their loads.

The scalehouse personnel also inquire as to the contents of each incoming load to screen for unacceptable materials. Any vehicle suspected of carrying unacceptable materials (liquid waste, sludges, or hazardous waste) are prevented from entering the disposal site unless the driver can provide evidence that the waste is acceptable for disposal at the site. Logan Landfill reserves the right to refuse service to any suspect load. Vehicles carrying

unacceptable materials are required to exit the site without discharging their loads, and the Bear River Health Department is informed about the incident. If a load is suspected of containing unacceptable materials, the following information is recorded: date, time, name of the hauler, driver, telephone number of hauler, vehicle license plate, and source of the waste. The scalehouse then notifies the working face operator that a load is suspect and that load is further inspected at the landfill tipping area before final disposal is allowed. Appendix G contains the forms utilized to document waste inspections.

After a vehicle leaves the scalehouse, the vehicle is routed to the appropriate discharge location. Loads are regularly surveyed, and or inspected at the tipping area. If a discharged load contains inappropriate or unacceptable material, the discharger is required to reload the material and remove it from the landfill site. If the discharger is not immediately identified, the area where the unacceptable material was discharged is cordoned off. Unacceptable material is moved to a designated area for identification and preparation for proper disposal.

### **3.2.2 Waste Acceptance**

The Logan Landfill uses a software package entitled "DMS Plus" in the scale house to record information about incoming loads. It records data like weights, waste type, account information and amount charged. With this program landfill personnel are able to track all incoming waste as well as bill and receive payment from all customers. When a vehicle with waste stops on the scale; the scale operator identifies the load as to whether it is a commercial hauler, general public or private individual with an account. The proper codes are entered into the computer identifying the material, hauler, and account number. All loads larger than a pickup or a single axle trailer are weighed and charged accordingly. This information is printed on a two-part ticket; the customer receives one copy and one copy is saved for use by the Manager, the Utility Billing Editor or any other employee who has responsibilities relating to the landfill that may need information from these tickets. The tickets are ultimately stored in the archive at the Logan City Environmental Center. Information regarding all transactions is stored on the scale house computer at the landfill. All transactions are backed up on a nightly basis to the Logan Cities computer network. Data extracted from the scale house computer is used to create a portion of the daily landfill record. Any or all transactions may be retrieved as necessary. A copy of a typical Daily Operating Record, Daily Cash

Reconciliation & Revenue Receipt, and Material Summary Reports are included in Appendix G.

After each load has been recorded, the driver is directed where to take the load. Household wastes, commercial wastes, animal by-products and dead animals are directed to the MSW working face. Green wastes and manure are directed to the composting facility with construction and demolition materials being directed to the C&D working area.

Waste screening is done as needed or scheduled according to the procedures outlined in Section 3.3 Waste Inspection. No open burning is allowed. No smoking is allowed anywhere on the landfill.

### **3.2.3 Waste Disposal**

Wastes are dumped at the toe of the work face when possible and spread up the slope in one to two foot lifts, keeping the slope at a maximum of three to one (horizontal to vertical) configuration.

Work face dimensions are kept narrow enough to minimize blowing litter and reduce the amount of material needed for daily cover. Typically, the width of the working face is two and one-half times the width of the dozer blade (40 feet). This facilitates complete compaction of the waste and keeps the width narrow enough to minimize amount of daily cover required.

Typically the compactor is operated with the blade facing uphill. Equipment operations across the slope are avoided to minimize the potential of equipment tipping over. In addition to safety concerns, a toe of slope to crest of slope working orientation provides the following benefits:

- Minimizes blowing litter problems
- Increases equipment compactive effectiveness
- Increased visibility for waste placement and compaction, and
- More uniform waste distribution.

Grade stakes are used when necessary to control cell height and top surface grade. The top of the interim surfaces typically range from 2 to 5 percent to promote runoff with the cell heights ranging from 8 to 10 feet.

Wastes are compacted by making three to five passes up and down the slope. Compaction reduces litter, differential settlement, and the quantities of cover soil needed. Compaction also extends the life of the site, reduces unit costs, and leaves fewer voids to help reduce vector problems. Care is taken that no holes are left in the compacted waste. Voids are filled with additional waste as they develop.

Intermediate cover is applied to all areas of the active cell which will not receive additional waste within 30 days. Intermediate cover consists of an additional 12 inches of soil being placed over the 6 inches of daily cover soil.

### **3.2.4 Special Wastes**

#### **3.2.4.1 *Used Oil and Batteries***

The Logan Landfill is a "Used Oil Recycle Center". When a customer has used oil to dispose of they fill out the form "UTAH DIYer USED OIL LOG" provided by UDEQ. A report generated from this form is turned in quarterly stating the amount of oil deposited and the customer's names. A waste oil furnace is used in one of the equipment storage buildings to dispose of the used oil while providing heat for the shop.

Batteries are not accepted at the working face. The Logan Landfill provides an area (located in the same shed as the used oil collection tank) to collect and store used batteries. Batteries are stored until a sufficient number is accumulated to facilitate delivery to a recycler.

#### **3.2.4.2 *Bulky Wastes***

White goods are accepted at the landfill and are separated for recycling. All appliances containing refrigerants are segregated in a separate area, with refrigerant being removed by a qualified contractor. Used cars are not accepted at the Logan Landfill. Persons seeking to dispose of used car bodies are directed to take the car to Western Metals located near Plymouth, Utah.

#### **3.2.4.3     *Tires***

Logan Landfill charges for tires from the general public. Commercial haulers are prohibited from disposing of tires at the landfill. All tires are stored in a designated tire storage area. When sufficient quantities of tires are collected, a tire hauler is called and the tires are removed from the facility for recycling.

#### **3.2.4.4     *Dead Animals***

Dead animals are accepted at the landfill. A designated trench is prepared for the acceptance of these animals. They are collected in the trench and a minimum of 6" of cover is placed over the animals at the end of each day. In the event the trench is inaccessible, the dead animals are incorporated into the face of the landfill. The incorporation of the carcasses into the landfill is accomplished by pushing up the toe of the face and depositing the animal in the bottom of the toe; waste is then pushed over the top of the animal.

#### **3.2.4.5     *Asbestos Waste***

The Logan Landfill is permitted to accept asbestos waste. Asbestos waste is handled, transported and disposed in a manner that will not permit the release of asbestos fibers into the air and that complies with Sections R315-315-2 of the State regulation. No transporter or disposal facility shall accept friable asbestos waste unless the waste has been adequately wetted and containerized.

#### **3.2.4.6     *Grease Pit and Animal Waste By-Products***

Waste from restaurant grease traps and slaughterhouse by-products are accepted at the landfill. These wastes require 24 to 48 hour notice before disposal. If the waste passes the paint filter test, it is deposited in the dead animal trench and covered daily. If excess liquid is present in the waste, the waste is unloaded on a specially prepared drying pad. The waste remains on the drying pad until the moisture has been sufficiently reduced to pass the paint filter test. Once the waste passes the paint filter test, the waste is deposited either in the dead animal trench or at the toe of the working face where it is immediately covered.

### **3.3 WASTE INSPECTION**

#### **3.3.1 Landfill Spotting**

Learning to identify and exclude prohibited and hazardous waste is necessary for the safe operation of the landfill. The Operators and Attendants are required to receive initial and periodic hazardous waste inspection training. Inspectors are required to obtain the initial 40-hour HAZWOPER Training and attend yearly refresher courses. Certificates of training are kept in the personnel files.

Hazardous wastes have either physical or chemical characteristics that could harm human health or the environment. A waste is considered hazardous if it falls into either of two categories: 1) a listed waste, or 2) a characteristic waste. Hazardous wastes are not accepted at the Logan Landfill.

Small quantity generators (<100 kg/mo) and household quantities are exempt from hazardous waste regulations. However, hazardous wastes are most likely to enter the landfill mixed in with common household waste. Public education and periodic waste screening are the tools used to minimize the amount of inadvertent hazardous waste entering the landfill.

#### **3.3.2 Random Waste Screening**

Random inspections of incoming loads are conducted according to the schedule established by the landfill management. More than one percent of the vehicles coming in the landfill are selected randomly for inspection according to the schedule. If frequent violations are detected, additional random checks are scheduled at the discretion of the landfill management.

If a suspicious or unknown waste is encountered, the Operator proceeds with the waste screening as follows:

- The driver of the vehicle containing the suspect material is directed to the waste screening area.

- The waste screening form is completed.
- Protective gear is worn (leather gloves, steel-toed boots, goggles, coveralls, and hard hat).
- The suspect material is spread out with the loader or hand tools and visually examined.
- Suspicious marking or materials, like the ones listed below, are investigated further:
  - Containers labeled hazardous
  - Material with unusual amounts of moisture
  - Biomedical (red bag) waste
  - Unidentified powders, smoke, or vapors
  - Liquids, sludges, pastes, or slurries
  - Asbestos or asbestos contaminated materials
  - Batteries
  - Other wastes not accepted by the landfill

The landfill management is called if unstable wastes that cannot be handled safely or radioactive wastes are discovered or suspected. The forms utilized by landfill personnel to record waste screening activities are included in Appendix G.

### **3.3.3 Removal of Hazardous or Prohibited Waste**

Should hazardous or prohibited wastes be discovered during random waste screening or during tipping, the waste is removed from the landfill as follows:

The waste is loaded back on the hauler's vehicle. The hauler is then informed of the proper disposal options. If the hauler or generator is no longer on the premises and is known, they are asked to retrieve the waste and informed of the proper disposal options. The landfill management will arrange to have the waste transported to the proper disposal site and then bill the original hauler or generator. The landfill management will also inform Bear River Health Department about the incident.

A record of the removal of all hazardous or prohibited wastes is kept in the site operational records.

**3.3.4 Hazardous or Prohibited Waste Discovered After the Fact**

If Hazardous or prohibited wastes are discovered in the landfill, the following procedure is used to remove them:

- Access to the area is restricted.
- The landfill management is immediately notified.
- The Operator will remove the waste from the working face if it is safe to do so.
- The waste is isolated in a secure area of the landfill and the area cordoned off.
- The Fire Marshall’s Hazardous Materials Response Team is notified.
- The Bear River Health Department is also notified

The DSHW, the hauler (if known), and the generator (if known) are notified within 24 hours of the discovery. The generator (if known) is responsible for the proper cleanup, transportation, and disposal of the waste.

**3.3.5 Notification Procedures**

The following agencies and people are contacted if any hazardous materials are discovered at the landfill:

John Christensen, Landfill Manager ..... (435) 994-0495  
Bear River Health Department..... (435) 792-6500  
Director, DSHW ..... (801) 538-6170  
City of Logan Fire Marshall..... (435) 716-9515

A record of conversation is completed as each of the entities is contacted. The record of conversation is kept in the site operational records.

## **3.4 FACILITY MONITORING AND INSPECTION**

### **3.4.1 Groundwater**

The Logan Landfill has State of Utah Division of Solid and Hazardous Waste approved groundwater monitoring plan and will continue to follow the plan. This plan includes sampling and analysis plans for the monitoring of groundwater at the landfill. Appendix C includes a copy of the table of contents for the most current Groundwater Monitoring Plan.

### **3.4.2 Surface Water**

The Logan City Landfill permit drawings illustrate the locations and details of the surface water drainage control systems for both run-on and run-off. In general, surface water is prevented from running into the active landfill area by berms. Each area will have a storm water basin sized to collect the run-off from the active area. The drawing (Appendix A) indicate the location of the storm water basins. Calculations of the anticipated run-off volumes are shown in Appendix H. Run-off from the final cover will be managed by a combination of berms and ditches. The berms will be placed to divert the water around the active area to culverts and a settling pond. Landfill staff will inspect the drainage system monthly. Temporary repairs will be made to any observed deficiencies until permanent repairs can be scheduled. Logan City staff or a licensed general contractor will repair drainage facilities as required.

The Logan Landfill has an approved Multi-Sector General Permit for Storm Water Discharges Associated with Industrial Activity, Coverage No. UTR000703. A copy of the most current UPDES Permit is included in Appendix I.

### **3.4.3 Leachate Collection**

The Logan Landfill has a commingled leachate and groundwater collection system at the landfill. This collection system extended the entire south and west perimeter of the landfill. Any water that comes in contact with the water will be direct into this collection system and treated through the serious wetland treatment system west of the landfill. Logan Landfill is currently in the process of installing a storm water, and leachate management system at the north perimeter of the landfill.

#### **3.4.4 Landfill Gas**

This facility is monitored for methane gas on a quarterly basis. Concentrations of methane gas are measured with a hand-held gas monitor.

Gas readings are recorded at the all Groundwater Monitoring Well Locations, the New Scale House, Old Scale House (landfill Building), Big Equipment Shed, Southeast Corner, South Boundary, Scale House Green Waste, North West Stream, North East Corner, South West Stream, Household Hazardous Waste Shed, all Groundwater/Leachate Manhole Covers, Shed at the Green Waste Facility and Little Cat Shed. Readings are recorded on the "Gas Log" sheet and kept on file in the office.

If methane releases are detected in excess of 25 percent of the LEL, in the landfill building or more than 100 percent of LEL at the property boundary, the procedure outlined in the "Explosive Gases" section is followed. The forms utilized by landfill personnel to record gas monitoring activities are included in Appendix G.

The Logan Landfill has a Title V Operating Permit issued from the Division of Air Quality. A copy of the most current Title V Operating Permit is included in Appendix J.

#### **3.4.5 General Inspections and Quarterly Inspection**

Routine inspections are necessary to prevent malfunctions and deterioration, operator errors, and discharges that may cause or lead to release of wastes to the environment or a threat to human health. Operators are responsible for conducting and recording routine inspections of the landfill facilities according to the following schedule:

Operators perform pre-operational inspections of all equipment daily. A post-operational inspection is performed at the end of each shift while equipment is cooling down.

All equipment is on a regular maintenance schedule. The on-site mechanic performs all oil changes and a complete inspection of each piece of equipment at this time. A logbook is maintained on each piece of equipment and any repairs and comments concerning the

inspection are contained in the log. Oil samples are pulled when each machine is serviced and results are recorded in the machine log.

Facility inspections are completed on a quarterly basis. Any needed corrective action items are recorded and the Operators complete needed repairs. If a problem is of an urgent nature, the problem is corrected immediately.

Scale maintenance is performed annually at a minimum. If specific problems arise before scheduled maintenance, scale maintenance is done as required. The scale is certified on an annual basis.

Landfill personnel also conduct quarterly inspections. This inspection is performed by a team of qualified landfill employees and is intended to assess the condition of the following area of the landfill. This includes dust control activities, cover condition, waste control, scale house and recycling area, recycling area, perimeter fence, run-off/ run-on system, roads, buildings (Scale house, oil collection, office area, equipment building), groundwater monitoring well, compost area, tipping face, disease vector, general appearance. The forms utilized by landfill personnel to record general and quarterly inspection activities are included in Appendix G.

### **3.5 CONTINGENCY AND CORRECTIVE ACTION PLANS**

The following sections outline procedures to be followed in case of fire, explosion, groundwater contamination, release of explosive gases, or failure of the storm water management system.

The City Fire Marshal's Hazardous Materials Response Team is contacted in all cases where hazardous materials or materials contaminated with PCB's are suspected to be involved.

#### **3.5.1 Fire**

The potential for fire is a concern in all landfills. Logan Landfill staff follows a waste handling procedure to minimize the potential for a landfill fire. If any load comes to the landfill on fire, the driver of the vehicle is directed to an area away from the working face. The burning waste is unloaded, spread out, and immediately covered with sufficient amounts of soil to smother the fire. Once the burning waste cools and is deemed safe, the material is then incorporated into the working face. Some loads coming to the landfill may be on fire but

not detected until after being unloaded at the working face. If a load of waste that is on fire is unloaded at the working face, the load of waste is immediately removed from the working face, spread out, and covered with soil.

The City of Logan Fire Department is called if it appears that landfill personnel and equipment cannot contain any fire at the landfill. The City Fire Department is also called if a fire is burning below the landfill surface or is difficult to reach or isolate.

In case of fire, the Manager and Director are notified immediately. A written report detailing the event is placed in the operating record within seven days, including any corrective action taken.

### **3.5.2 Release of Explosive Gases**

Methane gas generation and concentration is not anticipated to be a problem at the Logan Landfill. However, due to the production of methane in all landfills, landfill gas levels are monitored quarterly. If a concentration of methane is detected in excess of 25 percent of LEL in a landfill building, 100 percent LEL at the property boundary, or over 100 parts per million in an off-site building, the following procedure is followed:

- Landfill operations cease immediately. The landfill is evacuated if personnel or buildings may be threatened.
- If gas is detected in a building, the doors and windows are opened to allow the gas to escape.
- If off-site buildings or structures appear to be threatened, the Logan Fire Department is called, the property evacuated, and the property owners notified.
- The Manager and Director are called. The release is monitored and a temporary corrective action implemented as soon as possible. Permanent corrective action is completed as soon as practicable.

The DSHW is notified immediately and a written report submitted within 14 days of detecting the release. The gas levels detected and a description of the steps taken to protect human health are placed in the operating record within seven days of detection. A remediation plan for the methane gas release is placed in the operating record within 60 days of detection and the Executive Secretary is notified that the plan has been implemented.

### **3.5.3 Explosion**

If an explosion occurs or seems eminent, all personnel and customers are accounted for and the landfill will be evacuated. Corrective action is immediately evaluated and implemented as soon as practicable.

The Manager and Director will be notified immediately and the City of Logan Fire Department is called. The Executive Secretary is notified immediately.

If the explosion is the result of methane gas, the gas levels detected and a description of the steps taken to protect human health is placed in the operating record within seven days of detection. A remediation plan for the methane gas release is placed in the operating record within 60 days of detection and the Executive Secretary is notified that the plan has been implemented.

### **3.5.4 Failure of Run-On/Run-Off Containment**

The purpose of the run-on/run-off control systems is to manage the stormwater falling in or near the landfill. Water is diverted away from the landfill using a series of ditches, berms, and roads. These structures are inspected on a regular basis and repaired as needed. All stormwaters falling or flowing near the active landfill cell are prevented from flowing into the active area by diversion berms and ditches.

If the run-on system fails, temporary measures such as temporary berms, ditches, or other methods are used to divert water from the active landfill cell.

If a run-off ditch or berm fails, temporary berms or ditches are constructed until a permanent run-off structure can be constructed.

Any temporary berms or other structures are checked at least every 2 hours during working hours of the landfill. Permanent improvements or repairs are made as soon as practicable.

The Manager and Director are notified immediately if a failure of either of the run-on or run-off systems is discovered. The event is fully documented in the operating record, including corrective action within 14 days.

### **3.5.5 Groundwater Contamination**

If groundwater contamination is ever suspected, studies to confirm contamination will be conducted and the extent of contamination documented. This program may include the installation of additional groundwater monitoring wells. The groundwater monitoring program may be updated and corrective action taken as deemed necessary, with the approval of the Executive Secretary.

### **3.6 CONTINGENCY PLAN FOR ALTERNATIVE WASTE HANDLING**

The most probable reason for a disruption in the waste handling procedures at the Logan Landfill will be weather related. The landfill may close during periods of inclement weather such as high winds, heavy rain, snow, flooding, or any other weather-related condition that would make travel or operations dangerous. The Logan Landfill may also close for other reasons like fire, natural disaster, etc. In general, the Logan Landfill minimizes the possibility of disruption of waste disposal services from an operational standpoint.

In case of equipment failure, the Logan City Road Department will provide the necessary equipment to continue operations while repairs are being made. If the landfill is not operational for any unforeseen reasons, the City of Logan Environmental Department Collection Division will be notified.

Logan City has a reciprocal agreement with Box Elder County Landfill to provide an alternative site for temporary disposal of municipal solid waste should the need arise.

### **3.7 MAINTENANCE PLAN**

#### **3.7.1 Groundwater Monitoring Wells and Leachate System**

The Logan Landfill personnel will conduct quarterly inspection which includes the assessment of the groundwater monitoring wells and the groundwater/leachate collection system.

### **3.7.2 Gas Monitoring System**

The City of Logan Landfill is not expected to produce and concentrate significant amounts of landfill gas. No gas collection system is planned. Quarterly gas monitoring is conducted using a hand held meter.

## **3.8 DISEASE AND VECTOR CONTROL**

The vectors encountered at the Logan Landfill are flies, birds, mosquitoes, rodents, skunks, and snakes. The program for controlling these vectors is as follows:

### **3.8.1 Insects**

Eliminating breeding areas is essential in the control of insects. Logan Landfill minimizes the breeding areas by covering the waste daily and maintaining surfaces to reduce ponded water. The Logan City mosquito abatement program personnel assist the landfill as necessary.

### **3.8.2 Rodents**

Reducing potential food sources minimizes rodent populations at the landfill. The potential food sources are minimized by properly applying daily cover.

In the event of a significant increase in the number of rodents at the landfill, a professional exterminator will be contacted. The exterminator would then establish an appropriate protocol for pest control in accordance with all county, state and federal regulations.

### **3.8.3 Birds**

The Logan Landfill has birds (seagulls). Good landfilling practices of waste compaction, daily covering of active working face, and the minimization of ponded water has to date alleviated most of the bird problems. Occasionally the landfill scares the birds by using cracker and whistler shells.

### **3.8.4 Fugitive Dust**

The roads leading to the landfill are paved with site access provided via a maintained gravel access road. Some construction activities and daily traffic produce a certain amount of dust.

Landfill activities compounded by the occasional high wind present a periodic fugitive dust problem. If the dust problem elevates above the “minimum avoidable dust level”, the landfill applies water to problem areas.

The landfill has a water tank truck and is used to suppress the dust. Water is applied to the gravel roads leading to all landfill facilities and to the tipping face. The water is applied as often as needed to control the dust.

### **3.8.5 Litter Control**

Due to the nature of landfilling operations, litter control is an ongoing challenge. Landfill personnel perform routine litter cleanup to keep the landfill and surrounding properties clear of windblown debris.

Whenever possible, the working face is placed down wind so that blowing litter is worked into the landfill face. During windy conditions, landfill personnel minimize the spreading of the waste to reduce the amount of windblown debris

## **3.9 RECYCLING**

The Logan Landfill provides bins at the landfill for the recycling of cardboard, newspaper, magazines, carpet padding and scrap metal. The Logan City Environmental Department finished the final phase of implementing a county-wide single stream residential recycling program this summer. Currently, all of the households in Cache Valley are participating in this program.

The Environmental Department also provides recycling services to some of the retail and commercial entities in Cache Valley.

The Logan Landfill tries to divert as much green waste as possible to the composting facility that operates immediately east of the landfill and is managed by the Environmental Department. The composting facility accepts manure, hay, yard wastes, trees, tree limbs and some untreated lumber. These materials are composted or ground and processed to produce various landscaping products that are sold to the public. Logs and tree limbs brought to the

facility that are too large to feasibly process into landscaping materials are stockpiled and sold as firewood.

The Environmental Department operates and services several green waste recycling drop sites in the county outside of Logan City and they provide an optional curbside green waste recycling service to county residents.

### **3.10 TRAINING PROGRAM**

As part of the initial training of new employees, the Landfill Operator's Manual is required reading. All personnel are required to review the approved permit annually.

All personnel associated with the operation of the landfill receive training annually. The "Sanitary Landfill Operator Training Course" offered by the Solid Waste Association of North America (SWANA) is required by all employees within 1 year of hire date. Certificates of completion are kept in personnel files. Regular safety and equipment maintenance training sessions are held to ensure that employees are aware of the latest technologies and that good safety practices are used at all times.

### **3.11 RECORDKEEPING**

A daily operating record is maintained as part of a permanent record on the following items:

- Number of loads entering the landfill and types of wastes received.
- Deviations from the approved Plan of Operation.
- Number of waste inspections conducted.
- Percentage of loads inspected.
- Amount and type of cover material used.
- Asbestos cell monitoring.
- Dust control record keeping.
- Personnel training and notification procedures.
- Landfill gas-monitoring results.
- And a scale house load inspection log.

An example copy of daily operating record can be found in Appendix G.

### **3.12 SUBMITTAL OF ANNUAL REPORT**

The Logan City Environmental Depart will submit a copy of its solid waste facility annual report to the Executive Secretary by March 1 of each year for the most recent calendar or fiscal year of facility operation. The annual report will include facility activities during the previous year and will include, at a minimum, the following:

- Name and address of facility.
- Calendar or fiscal year covered by the annual report.
- Facility type and status.
- Annual quantity, in tons or volume, in cubic yards of solid waste handled for each disposal facility, including applicable recycling facilities.
- Annual update of required financial assurances mechanism pursuant to Utah Administrative Code R315-309.
- Ground water monitoring results.
- Explosive gas monitoring results.
- And an annual training report.

### **3.13 INSPECTIONS**

The Manager, or his/her designee, inspects the facility to minimize malfunctions and deterioration, operator errors, and discharges that may cause or lead to the release of wastes to the environment or to a threat to human health. These inspections are conducted on a quarterly basis, at a minimum. An inspection log is kept as part of the operating record. This log includes at least the date and time of inspection, the printed name and handwritten signature of the inspector, a notation of observations made, and the date and nature of any repairs or corrective actions. Inspection records are available to the Executive Secretary or an authorized representative upon request.

### **3.14 RECORDING WITH COUNTY RECORDER**

Plats and other data, as required by the County Recorder, will be recorded with the Cache County Recorder as part of the record of title no later than 60 days after certification of closure.

### **3.15 STATE AND LOCAL REQUIREMENTS**

The Logan Landfill maintains and will continue to maintain compliance with all applicable state and local requirements including zoning, fire protection, water pollution prevention, air pollution prevention, and nuisance control.

### **3.16 SAFETY**

Landfill personnel are required to participate in an ongoing safety program. This program complies with the Occupational Safety and Health Administration (OSHA), and the National Institute of Occupational Safety and Health (NIOSH) regulations as applicable. This program is designed to make the site and equipment as secure as possible and to educate landfill personnel about safe work practices.

The Logan City Safety Department, trains all of the landfill employees in First Aid , CPR, accident investigation, drug and alcohol policy, lockout and tagout, confined space entry, blood born pathogen, hazard communication, defensive driving, spill prevention control and counter measure, hazardous waste, and commercial driving license requirements.

### **3.17 EMERGENCY PROCEDURES**

In the event of an accident or any other emergency situation, the Operator notifies the scale house Attendant who immediately contacts the Manager and proceeds as directed. If the Manager is not available, the Attendant calls the Director or the appropriate emergency number posted by the telephone. The emergency telephone numbers are:

Cache County Central Dispatch ..... 911  
John Christensen, Landfill Manager .....(435) 716-9791 or (435) 994-0495  
Warren Hullinger, Landfill Foreman .....(435) 750-9981 or (435) 994-0693  
Issa Hamud, Environmental Dept. Director .(435) 716-9752 or (435) 757-9033

APPLICATION TO RENEW A PERMIT TO  
OPERATE A CLASS I LANDFILL

Logan City

**PART III - TECHNICAL REPORT**

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## **SECTION 1 – MAPS**

A General Arrangement (Drawing 2) of the existing landfill layout is provided in the facility drawings contained in Appendix A. The locations of the groundwater monitoring wells are all contained in the Groundwater Monitoring Plan (Kleinfelder, 1998) and the gas monitoring points are presented in the existing Operations Plan (JMM, 1992).

Additionally, the most recent U.S. Geological Survey topographic map, 7-1/2 minute series, showing the waste facility boundary (Drawing 1), is also included in Appendix A.

## **SECTION 2 - GEOHYDROLOGICAL ASSESSMENT**

### **2.1 GEOLOGY**

#### **2.1.1 Regional Geology**

Cache Valley is in the northeast corner of the Basin and Range physiographic province described by Frenneman (1993). Cache Valley is underlain by a narrow, elongate graben formed by high-angle normal faults similar to those that bound other basins of the Basin and Range province (Frenneman, 1993). Sediments of Tertiary and Quaternary age filled the valley as displacement occurred on the fault. Sedimentary and metamorphic rocks of Permian to Precambrian age, including limestone, dolomite, quartzite, sandstone, mudstone, siltstone and shale compose the mountain blocks surrounding Cache Valley and likely underlie younger basin-fill deposits. These rocks are the source of most of the detrital material that makes up the deposits of Tertiary and Quaternary age in the valley. Rocks of Tertiary age in Cache Valley include the poorly cemented to well-cemented conglomerate, sandstone and limestone of the Wasatch Formation (Bjorklund, 1971) and the poorly consolidated rocks of the Salt Lake Formation (Williams, 1962). The Salt Lake Formation is exposed in an almost continuous belt in the foothills around the valley and consists of a lower conglomerate unit, a tuff unit, and an upper conglomerate and sandstone unit (Williams, 1962).

The floor of Cache Valley consists mostly of unconsolidated basin-fill deposits of Quaternary age from former Lake Bonneville and older lakes, and younger alluvium. The unconsolidated basin fill deposits have an approximate maximum thickness of 1,340 feet (Bjorklund, 1971). Alluvial fan and landslide deposits of Quaternary pre-Lake Bonneville age are exposed locally at the margins of the valley. In the valley interior, at least several hundred feet of fluvial and lacustrine sediments of Quaternary age underlie Lake Bonneville deposits and overlie the Salt Lake Formation (Williams, 1962). Sediments deposited by Lake Bonneville include the Alpine and Bonneville Formations, which consist mostly of silt with some gravel, and the overlying Provo Formation, which consists of intertonguing layers of gravel, sand, silt and clay (Williams, 1962). Gravel and sand of Lake Bonneville age were deposited as shore embankments, deltas, bars, and spits near the mountain fronts while silt and clay settled from suspension in the lake water in the lower elevation of Cache Valley.

Numerous north-south trending faults have broken the graben beneath Cache Valley and resulted in unevenness in the basin floor (Williams, 1958). Williams describes several foothill benches at the margins of the graben in the Utah part of Cache Valley where unconsolidated rocks are shallower than in the center of the graben. Largest of these is Clarkston Bench (Williams, 1958), which is located beneath the area around Clarkston, Utah.

### **2.1.2 Local Geology**

The area in and around the Logan Landfill is underlain by fine-grained, low-permeability lacustrine soil with generally high plasticity. Minor sand lenses are present in the uppermost 15 feet, and the low permeability soil becomes interbedded with sand and gravel at depths below about 110 feet, although some minor sandy layers are present at depths below about 50 feet. There are no known faults, unstable slopes, or subsidence areas in the vicinity of the Logan Landfill.

Most of the production well logs in the vicinity of the Logan Landfill indicate that the silty clay found at the land surface extends to depths ranging from 45 to 50 feet, and is underlain by a silty sand unit. The silty sand unit is approximately 6 feet thick and is underlain by coarser sandy gravel, which is tapped as a water source in the vicinity of the landfill.

Based on site investigations, shallow soil in and around the Logan Landfill consists of fine-grained clay with occasional fine sand layers. In the area immediately west of the landfill, CH2M Hill (consultant report) identified up to 1 foot of silty organic clay overlying plastic clay with minor lenses of fine-grained sand (CH2M Hill, 1989). When these sandy layers contain groundwater, they are considered part of the shallow water-bearing zone, as discussed in the following section on hydrogeologic conditions. Geotechnical analyses indicate that the shallow clays are highly plastic and generally classify as CH, which is considered an inorganic clay of high plasticity (fat clay), according to the Unified Soil Classification System (USCS). Vertical permeabilities are low, ranging from  $6 \times 10^{-7}$  to  $4 \times 10^{-8}$  cm/sec. Based on the moisture-density relationship data (Proctors), the optimum moisture content ranges from 7.6 to 21.0 percent and maximum dry unit weight varies from 96 to 105.5 pcf. Geologic and geotechnical data is included in Appendix K.

## **2.2 HYDROGEOLOGIC CONDITIONS**

### **2.2.1 Regional Hydrogeology**

Groundwater in Cache Valley occurs in consolidated rocks, poorly consolidated rocks, and unconsolidated basin-fill deposits, and is derived from precipitation, infiltration of irrigation water, and seepage from canals and streams. Wells in Cache Valley supply water for irrigation, public supply, industrial, domestic, and stock use. Some spring discharge is diverted for irrigation, public supply or domestic use. Some groundwater in the unconsolidated basin-fill deposits, which is the focus of this study, may be derived from subsurface inflow from adjacent consolidated rock or adjacent unconsolidated basin-fill groundwater systems.

Unconsolidated basin-fill deposits are exposed at the land surface throughout most of Cache Valley, and as thin deposits that extend into the mountains along the Cub River and Mink Creek drainages. The unconsolidated basin-fill deposits, which are the primary water-bearing geologic unit in Cache Valley, consist of sediments that range in size from the clays and silts of the lacustrine deposits to the sands, gravels, cobbles and boulders of the alluvial fan and terrace deposits. In general, coarser-grained, permeable deposits predominate along the east bench adjacent to the Bear River Range. The deposits become finer grained and less permeable toward the center of the valley although geohydrologic sections show some sand layers interbedded with silts and clays in the center of the valley (McGreevy and Bjorklund, 1971).

Most of the unconsolidated basin-fill deposits in Cache Valley are saturated at shallow depths with the exception of deposits near the mountain fronts, where several hundred feet of unconsolidated basin-fill remain unsaturated. Near the mountain fronts, groundwater generally is unconfined. Perched groundwater may occur locally in areas where infiltration water becomes perched above less permeable clay layers.

In the center of Cache Valley, groundwater typically is confined below depths of about 50 feet because the interbedded clays act as confining layers that impede the upward flow of water. Because clay layers are thin and/or discontinuous, leaky artesian conditions exist. There are artesian wells in the center of the valley, particularly in the southern valley. Typically, groundwater less than 50 feet deep in the center of the valley is unconfined.

### **2.2.2 Local Hydrogeology**

In the vicinity of the landfill, both a shallow, water table water bearing zone and a deeper, artesian aquifer is present. The shallow water bearing zone consists of the saturated clays with interbedded sandy lenses described in the preceding section. Although this zone transmits groundwater to some degree, it has none of the hydrologic properties that are typically associated with an aquifer. For this reason, this zone is referred to as the “shallow water bearing zone.”

A study by the U.S. Geological Survey indicates that the artesian aquifer is up to 1,000 feet thick near Logan and is the largest and most productive in Cache Valley (Bjorklund, 1971). Analyses of production well records near the Logan Landfill indicate that the top of the artesian aquifer lies about 100 to 150 feet below the landfill. Wells in the area flow under artesian conditions and are present on all sides of the Landfill (McGreevy, 1970). Groundwater quality from the artesian aquifer is considered to be good.

Further documentation of the artesian conditions beneath the Logan Landfill is provided by the Bishop Study, which examined artesian heads in the shallow water bearing zone in nested piezometers (Bishop, 1975). Bishop’s study generally indicates that the groundwater level increases with depth. Specifically, the Bishop study found that the depth to water measurements typically were comparable at 7 and 10.5 feet in each nest, but increased to a maximum at 14 feet. Below 14 feet, the depth to water measurements in the piezometers decreased with depth. Bishop suggests that the fall in head in the piezometers set at 14 feet is due to the confining clay layer at that depth, which acts as an aquiclude and separates the shallow water bearing zone from the deeper artesian aquifer.

The water level elevations measured during January through May of 1975 varied more in the shallow piezometers than in the piezometers set in the artesian aquifer. This suggests that the shallow unconfined saturated zone is at least partially independent of the artesian aquifer, and more subject to seasonal fluctuations.

Lateral groundwater elevations, gradients, and flow directions in the shallow water bearing zone were the subject of the Phase I investigation by James M. Montgomery, Consulting Engineering, Inc. (JMM, 1993). Groundwater elevations in areas where landfill refuse was encountered indicate that the lower portions of the landfill refuse are saturated with groundwater. In this situation, landfill leachate is being generated. Groundwater flow

direction varies by location, but in general, movement of groundwater in the shallow water-bearing zone is from northeast to southwest, Hydraulic gradients also vary but range from approximately 40 feet per mile beneath the landfill itself to about 500 feet per mile near the southwest corner of the landfill. The latter area is where saturated surface soil and minor groundwater seepage has been observed at the landfill.

Another feature that may affect groundwater flow in the Logan Landfill is an abandoned stream channel that runs predominantly east to west beneath the landfill. It is likely that subsurface flow preferentially follows the former channel. If soil along the banks of the former stream channel is less permeable than the material used to fill in the channel (presumably refuse), this channel may act as a conduit for groundwater.

Drainage ditches and ponds also affect groundwater gradients and flow directions. Stream channels and drainage ditches on the northeast and south perimeter of the Logan Landfill interact with the shallow water bearing zone. Surface water along the north and east sides recharges the shallow groundwater. Conversely, on the south side of the Logan Landfill, shallow groundwater may discharge into the adjacent stream channel.

## **2.3 SURFACE WATER HYDROLOGY**

### **2.3.1 Regional**

Surface water flows into the valley via the Bear River from Gem Valley, Idaho, from various streams draining the surrounding mountains, or flows from springs and seeps inside the valley itself. Except for the Bear River, perennial streams that enter Cache Valley originate in the Bear River Range. Surface water is the primary source of irrigation water in Cache Valley, and it also is used for recreation, aquaculture, and public supply. Total mean annual stream flow entering Cache Valley for 1960-1990 was about 1,751 cubic feet per second (1,268,600 acre-feet per year; USGS, 1994).

Surface water leaves Cache Valley through the Bear River, West Side Canal, and Hammond Main Canal, all of which flow from Cutler Reservoir. Total mean annual surface water outflow from Cache Valley for 1960-1990 was about 1,959 cubic feet per second (1,419,300 acre-feet per year, USGS, 1994).

Mean annual surface water outflow for 1960-1990 was greater than inflow by about 210 cubic feet per second (152,100 acre-feet per year). The difference is not significant because of potential errors associated with these estimations and in the accuracy of stream flow measurements (USGS, 1994).

The largest stream in the study area is the Bear River, which enters the northern end of Cache Valley from Oneida Narrows Reservoir in Idaho and exits through Cutler Reservoir in Utah. Where the Bear River enters Cache Valley, mean annual flow for 1960-1990 was 1,023 cubic feet per second (741,100 acre-feet per year). At the Utah-Idaho state line, mean annual flow of the Bear River was about 1,124 cubic feet per second (814,300 acre-feet per year) for 1960-1990. Where the Bear River leaves Cache Valley, mean annual flow for 1960-1990 was 1,682 cubic feet per second (1,179,500 acre-feet per year).

The Bear River flows through most of Cache Valley in a deep cut in the unconsolidated basin-fill deposits. This cut ranges in depth from a maximum of about 450 feet near Riverdale, Idaho, to a minimum of about 50 feet near Benson, Utah (USGS, 1994) and is deepest in the thick deposits of the Bear River delta in the north end of the valley.

The Logan River drains about 214 square miles of the adjacent Bear River range. Where the Logan River enters Cache Valley, mean annual flow for 1960-1990 was 257 cubic feet per second (186,200 acre-feet per year). The Logan River channel is incised as much as 200 feet into the surrounding basin-till deposits near the mouth of Logan canyon and as little as a few feet near U.S. Highway 89. Downstream from the confluence with the Blacksmith Fork, the Logan River flows in to the south end of Cutler Reservoir. The mean annual flow of the Logan River into the Cutler Reservoir is about 290 cubic feet per second (210,000 acre-feet per year; USGS, 1994).

### **2.3.2 Local**

There is extensive interaction between the shallow surface water bodies and the shallow groundwater in the Logan Landfill area. Surface water is present on all sides of the Logan Landfill in streams, canals, ponds and ditches. All these surface water bodies drain into the Logan River, which flows northwest approximately one-half mile southwest of the developed portion of the landfill property.

In the vicinity of the Logan Landfill, an unnamed perennial stream flows westward along the eastern and southern margins of the landfill. At the southeastern corner of the landfill, the stream has been diverted from its original course and flows in an excavated channel around portions of the eastern and southern margins of the landfill. At a point about midway along the southern boundary, the diverted stream reenters its original channel and continues westward to the southwestern corner of the active landfill. The abandoned portion of the stream channel lies within the confines of the active landfill, and may influence local shallow groundwater flow. Surface water also is present in drainage ditches that lie just outside the northern property boundary. These drainage ditches, which were excavated to lower the water table and allow the land to be used for agriculture, also flow westward when the groundwater table is high. At other times during the year, these ditches are dry. On adjacent property to the north, the Logan Fish Hatchery lies on another unnamed perennial stream. A portion of the flow in this stream is diverted into irrigation canals, which lie to the west. The undiverted portion flows southward through the adjacent property west of the active portion of the landfill to a confluence with the first stream.

Because of the high water table in the vicinity of the Logan Landfill, the flow line of this stream is generally below the level of the water table in adjacent areas. The streams are deemed “gaining streams” because groundwater discharges from the ground into the streams and they gain flow along their reaches. Along the southern margin of the Logan Landfill, water levels in the landfill are higher than in the adjacent stream, indicating that groundwater flows from the landfill into the adjacent stream.

## **2.4 WATER RIGHTS**

A search of the Utah Division of Water Rights database indicates that there are 107 total points of diversion within 2000 feet of the facility boundary. Of these points of diversion, there are approximately 82 groundwater wells and 25 points of surface water diversion. The surface water diversions are identified as springs, spring streams and drains. The underground diversions are nearly all wells, which are used primarily for stock watering and irrigation, however, there are some identified for domestic use. Several diversions are associated with the State of Utah, Division of Natural Resources and local irrigation companies. Those remaining are associated primarily with private individuals. Appendix L contains a full listing of the water rights within 2000 ft of the Logan Landfill boundary.

## **2.5 GROUNDWATER QUALITY**

### **2.5.1 Groundwater Data**

Background groundwater quality in the shallow water bearing zone was evaluated from samples taken from upgradient monitoring well MW-1 located approximately 1,300 feet east of the landfill.

Several groundwater wells were established in 1996-1997 in order to monitor groundwater quality at the landfill. Samples of the groundwater are taken semi-annually for analysis. A summary of the sampling periods, techniques, and procedures is provided in the Groundwater Monitoring Plan (Kleinfelder, 1998). The Table of Contents for this Plan is contained in Appendix C; the full plan has not been included as part of this permit renewal. The results of the analyses are provided in an Annual Report, which is provided to the Utah Division of Solid and Hazardous Waste (DSHW). Appendix D contains the most recent Annual Report (2006).

### **2.5.2 Statistical Analysis**

Statistical analysis of background water quality and recent sampling events are presented in the 2006 annual groundwater monitoring report provided to DSHW by Kleinfelder. Appendix D contains the most recent annual groundwater monitoring report.

## **2.6 SITE WATER BALANCE**

The site water balance has been completed and is detailed in the 1997 permit document. The analysis was reviewed as part of this permit application and no modifications were considered necessary. A copy of the Montgomery Watson water balance from the 1997 Logan City Sanitary Landfill Application for a Permit to Operate a Class I Landfill is included in Appendix M.

## **SECTION 3 – ENGINEERING REPORT**

### **3.1 LOCATION STANDARDS**

In accordance with the Subtitle D criteria, UDEQ has adopted specific location standards. The location standards are for new landfills or lateral expansions of existing landfills. The Utah location standards for Municipal Solid Waste Landfills (MSWLFs), as presented in the Solid Waste Permitting and Management Rules (R315-302), are outlined below.

#### **1 — Land Use Compatibility**

- Not to be located within 1000 feet of parks and protected areas
- Not to be located in an ecologically and scientifically significant area
- Not to be located on prime or unique farmland
- Not to be located within ¼ mile of existing dwellings, incompatible or historical structures, unless allowed by local land use planning or zoning
- Not to be located within 5,000 feet of airport runways
- Not to be located on archeological sites

#### **2 — Geologic Hazards**

- Proximity to a Holocene Fault
- Considerations for constructing in a seismic impact zone
- Consideration given to unstable areas

#### **3 — Surface Water**

- Will not affect public water system
- Will not affect existing lakes, reservoirs and ponds
- Cannot be located in a floodplain unless certain criteria are met

#### **4 — Wetlands**

- Not allowed unless:
  - Alternative location has been denied previously
  - Will not violate state water quality standard or Clean Water Act
  - Will not jeopardize threatened or endangered species
  - Will not cause or contribute to significant degradation of the wetlands

## 5 — Groundwater

Groundwater/landfill cell separation

Sole source aquifer

Groundwater quality

Source protection areas

The following sections present the Utah MSWLF location standards and discuss Logan Landfill's compliance with those requirements.

### **3.1.1 Land Use Compatibility**

The Logan Landfill is not known to be out of compliance with any element of the land use compatibility standard. However, the landfill has been designated as "exempt" in past permit documents due to its status as an existing landfill not seeking lateral expansion.

### **3.1.2 Geologic Hazards**

The Utah State Regulations indicate "No new facility or lateral expansion of an existing facility shall be located in a subsidence area, a dam failure flood area, above an underground mine, above a salt dome, above a salt bed, or on or adjacent to geologic features which could compromise the structural integrity of the facility".

The Logan Landfill has been designated as exempt from this regulation due to its status as an existing landfill not seeking lateral expansion. However, the landfill is not known to be located in a subsidence area, a dam failure flood area, above an underground mine, above a salt dome, or above a salt bed as mentioned in the Utah State Regulations.

#### **3.1.2.1 Fault Areas**

The landfill site is not located over or within 200 feet of any known Holocene fault. The nearest mapped fault is the East Cache fault zone, northern section (class A) which is located approximately 4.2 miles east of the site. The northern section is characterized by a single fault trace at the base of the range front of the Bear River range. In addition the Junction Hills fault is located approximately 4.5 miles west of the site. The Junction Hills fault is one of three splays of the West Cache fault zone.

### ***3.1.2.2 Seismic Impact Zone***

The EPA and the UDEQ define a seismic impact zone as any location where the expected peak bedrock acceleration from earthquake activity exceeds 0.10 times the acceleration due to gravity (g). The predicted Maximum Horizontal Acceleration (MHA) at the site is approximately 0.43g, which places the site within a Seismic Impact Zone (Plate N-1).

The MHA in lithified earth material is defined in 40 CFR part 258.14 (EPA, 1991) as the “maximum expected horizontal acceleration depicted on a seismic hazard map with a 90% or greater probability that the acceleration will not be exceeded in 250 years, or the maximum expected horizontal acceleration based on site specific seismic risk assessment.” This definition was adopted in full by the UDEQ. The acceleration value of approximately 0.43g was obtained from the United States Geologic Survey’s (USGS) Earthquake Hazards Program – National Seismic Hazard Mapping Project. The value is an estimated ground surface acceleration of a “stiff soil” site (site class D), which is identified as having a shear-wave velocity of 275 m/sec in the top 30 meters; sites with different soil types may amplify or de-amplify this value. Section 3.1.2.3 discusses the seismic impact zone analysis performed for this permit application.

### ***3.1.2.3 Seismic Impact Zone Analysis***

An analysis was performed by IGES to evaluate static and seismic stability of the final design. Input information for the stability analyses was evaluated based on the available information regarding the site and available published information.

Withiam et al, 1995, performed a large-scale direct shear test in-situ to measure strength properties of MSW. These test results defined a cohesion intercept of 209 psf and a friction angle of 30 degrees. Other work by Kavazanjian et al, 1995 suggest a friction angle of 33 degrees for MSW and a shear strength of 500 psf below an overburden stress of 627 psf. Based on this review, a friction angle of 30 degrees and a cohesion intercept of 200 psf were selected to define the strength properties of the Logan Landfill MSW and were used for the stability evaluation pertinent to this permit application.

Strength properties of the native and proposed final cover soils were also evaluated. Analysis for previous permits submitted for the Logan Landfill used strength values for the native clay soils of 29 degrees for the angle of internal friction and 130 psf for the cohesion intercept.

There was no indication that laboratory testing had been performed to support these values, however, based on published information and experience, these values seemed appropriate and were used in the analysis.

No information on the strength parameters of the cover soils or deeper granular soils was given and no laboratory tests were completed on these materials. Based on our understanding of the soils to be used for final cover materials, published literature and experience, strength values of 30 degrees and zero cohesion were used for the proposed cover materials and 35 degrees and zero cohesion were used for the deeper granular soils. A summary of the input soil parameters is provided in the following table:

Material	Internal friction angle, $\phi$ (degrees)	Cohesion intercept, $c$ (psf)	Unit weight, $\gamma$ (pcf)
MSW	30	200	72
Native clay soil (0-35 ft.)	29	130	115
Native granular soil (>35 ft.)	35	0	120
Proposed final cover soil	30	0	110

The unit weight values were derived from the previous permit studies (with slight modifications) as well as from published information and experience.

Static slope stability analyses were performed on critical slope geometries for each of the four proposed phases (Plate N-2). The following table summarizes the results from the static slope stability analyses, with graphical presentations in Appendix N (N-3 to N-6).

Phase	Static factor of safety, $FS$
1	2.990
2	2.179
3	2.037
4	2.293

Previous pseudostatic (seismic) screening of slope stability analyses results were performed by the Hynes and Franklin (1984) method, where the  $\frac{1}{2}$  the peak ground acceleration was used once it had been adjusted based on the height and shear wave velocity of the MSW (Singh and Sun, 1995). This method also recommends reducing the shear strength values of the soil by 20% to account for the increase in pore water pressure due to a seismic event. The Hynes and Franklin (1984) method screens the slope performance for less than 1 m of displacement for a factor of safety greater than or equal to 1.0. Many practicing engineers and publications have misinterpreted the displacements from this method to be less than 1 ft. Due to the discrepancies and generalizations associated with the Hynes and Franklin (1984) methodology, a simplified seismic slope displacement analysis was performed as recommended by Bray et al. (1998), with sliding length modification suggested by Rathje and Bray (2006, unpublished) (SCEC, 2002). This method incorporates site specific parameters including the radius to the nearest contributing seismic source, maximum anticipated earthquake magnitude, shear wave velocity, slope height, and yield acceleration from a pseudostatic analysis. It is the opinion of IGES that the approach recommended by Bray et al. (1998) is a more accurate representation of the response of the landfill during a seismic event due to the displacement analysis input parameters being site specific, not empirical and arbitrary data.

Pseudostatic slope stability analyses were performed on the four above mentioned slopes in order to determine the yield acceleration,  $k_y$ , and the depth to the critical sliding surface. The graphical presentations of the results from the pseudostatic slope stability analyses are presented in Appendix N (N-7 to N-10).

As mentioned in section 3.1.2.1 of this report, the nearest Class A fault is the East Cache fault zone, northern section, (fault ID 2352a). According to the USGS (2007a), a class A fault shows "Geological evidence demonstrates the existence of a Quaternary fault tectonic origin, whether the fault is exposed by mapping or inferred from liquefaction or other deformational features". The East Cache fault zone, northern section is characterized by a magnitude 7.3 earthquake (USGS, 2007b). The shear wave velocity of the MSW was determined to be approximately 700 ft/sec, using the higher bound (worst case) velocity from Singh and Sun (1995). The results from the simplified seismic slope displacement analysis yielded a maximum anticipated displacement of 6.9 inches during a seismic event (Plate N-11). A summary of the simplified seismic slope displacement inputs and results for the global stability are shown in the following table:

Phase	Yield acceleration, $k_y$ (g)	Maximum depth to critical surface, $H$ (ft)	Displacement (cm)	Displacement (in)
1	0.312	41.6	1.4	0.6
2	0.250	56.9	1.0	0.4
3	0.181	14.3	17.6	6.9
4	0.282	7.06	2.6	1.0

The existing approved final cover is a total of 48-inches in thickness and consists of the following layers from top to bottom: 6-inch topsoil layer, 18-inch vegetative layer, 18-inch low permeability layer, and a minimum 6-inch daily cover layer. Alternately, the final cover may consist of a single 60-inches of clay soil (Evapo-Transpiration cover), or may be constructed with a geosynthetic clay liner (GCL) with approximately 24-inches of overlying clay soils. Each of these alternatives with its varying conditions was considered in the analysis.

Due to the simplistic geometry of the cover, an infinite slope stability analysis was chosen to evaluate the performance of the cover, with a slope angle of 4H:1V. The internal friction angle and cohesion intercept of the reinforced GCL liner, the interface friction angle and cohesion intercept of the GCL to the soil, and the interface friction angle and cohesion intercept of the GCL to the polyethylene geonet (drainage layer) were evaluated to provide input parameters to be used in the slope stability analysis. Information was obtained for these various conditions from the GCL manufacturer who has had several independent laboratories perform the testing. This information is summarized below:

**Shear Strength Data of Bentomat ST as a Function of Overburden\***

Overburden stress, $\sigma_v$ (psf)	Internal friction angle, $\phi$ (degrees)	Cohesion intercept, $c$ (psf)
<3000	34.9	280
>3000	24.5	450

\* These values are an average of direct shear test data on hydrated bentonite.

Interface Shear Strength Data of Bentomat ST Against Geocomposite Drainage Layer\*

Overburden stress, $\sigma_v$ (psf)	Interface friction angle, $\phi$ (degrees)	Cohesion intercept, $c$ (psf)
<1200	23	79

\* These values are an average of direct shear test data on hydrated bentonite.

Interface Shear Strength Data of Bentomat ST Against Site-Similar Soils

Overburden stress, $\sigma_v$ (psf)	Interface friction angle, $\phi$ (degrees)	Cohesion intercept, $c$ (psf)
<1200	29.5	25

The results for the static infinite slope stability analysis for the cover is summarized in the following table (Plate N-12):

Model/interface	Static factor of safety, $FS$
Bentomat ST	5.509
Bentomat ST/Geocomposite drainage layer	2.467
Bentomat ST/Site soil	2.511
Proposed final cover soil	2.316

The same previously mentioned simplified seismic slope displacement (Bray et al., 1998) was performed on the cover, applied to the infinite slope stability analysis. A summary of the simplified seismic slope displacement inputs and results for the cover stability are shown in the following table (See Plate N-13):

Model/interface	Yield acceleration, $k_y$ (g)	Maximum depth to critical surface, $H$ (ft)	Displacement (cm)	Displacement (in)
Bentomat ST	0.958	4.12	0.0	0.0
Bentomat ST/Geocomposite drainage layer	0.331	4.12	1.0	0.4
Bentomat ST/Site soil	0.330	4.12	1.0	0.4
Proposed final cover soil	0.287	4.12	2.3	0.9

The industry-standard minimum required factors of safety of 1.5 for static slope stability analyses were met. The maximum amount of deformation as a result of an earthquake for the global stability is 6.9 inches, and 0.9 inches for the final cover. This amount of deformation is considered acceptable.

#### ***3.1.2.4 Unstable Areas***

The owner or operator of a landfill must consider several factors when determining whether an area is unstable. In guidance document R315-302, these factors are listed as; 1) soil conditions that may result in significant differential settling, 2) geologic or geomorphic features and 3) human-made features or events, both surface and subsurface.

Based on the site location, local geology and subsurface conditions, the soft soil conditions appear to be the only factor that may be considered a potential unstable area. The soft, saturated clay soils that extend to depths up to 50 feet beneath the landfill will consolidate as the landfill is filled. Based on the magnitude and extent of the proposed landfill mass at completion, 5 to 10 feet of overall settlement could occur at the center of the landfill. This could impact the performance of various design elements of the landfill.

Based on available data, the soils are relatively consistent across the site, and consolidation settlement will likely occur relatively uniformly avoiding large differential settlements over short distances. Also, since the landfill is filled slowly, a large portion of the settlement will have occurred at the time of closure and final cover placement. Never-the-less, the proposed final cover is planned to be constructed with no less than 4H:1V slopes, which are capable of sustaining several feet of settlement and still meet drainage requirements. Additionally, there is no bottom liner or leachate collection system at the Logan Landfill, so any amount of settlement, total or differential, will not affect the performance of the landfill bottom.

### **3.1.3 Surface Water**

The Logan Landfill status exempts the landfill from this rule. However, design considerations have been implemented to minimize the impact to surrounding surface waters. Run-off will be controlled as previously discussed to provide protection.

### **3.1.4 Wetlands**

The Logan Landfill status exempts the landfill from this rule. The landfill is not currently encroaching on wetlands. The landfill owners are sensitive to wetland issues and as stated previously, Logan City is in the process of establishing a bio-treatment basin consisting of man-made wetlands to treat leachate.

### **3.1.5 Groundwater**

The Logan Landfill status exempts the landfill from this rule. The provisions provided in the Groundwater Monitoring Plan (Kleinfelder, 1998) are in place to minimize and monitor any impacts the landfill operation has on the groundwater. The Table of Contents for this Plan is contained in Appendix C, the full plan has not been included as part of this permit renewal.

## **3.2 ESTIMATED FACILITY LIFE**

The current operational area of the Logan Landfill consists of 10 acres of C&D and 85 acres of MSW disposal areas. Based on the updated waste parameters and projected waste streams, the estimated life of the facility with the proposed operational changes is approximately 16 years, closing in approximately 2024. Details of the landfill life analysis are contained in Appendix O.

Based on current figures, approximately 425 tons per operational day of combined MSW and C&D are disposed of at the landfill. The Logan City anticipates that future compost operations, recycling, and additional C&D landfill capacity will keep the waste stream increases to approximately 4% per year. If additional C&D areas are not added to the landfill capacity or recycling/composting activities are not enhanced, the resulting increase in the waste stream will need to be planned for.

Section 4.3 Phased Closure provides greater detail of each of the planned landfilling phases.

### **3.3 LANDFILL MODIFICATIONS**

This permit application includes provisions for minor changes in the final cover topography. The change in topography of the MSW and subsequent final cover is to enhance surface water diversion and accommodate long-term landfill settlement. The slope of the top of the landfill is designed to a maximum slope of 6 horizontal to 1 vertical from slopes as flat as 10 horizontal to 1 vertical. The increase in slope is to maintain positive drainage as consolidation of foundation soils (clays) and the settlement within the MSW occurs.

The other notable change in the actual day-to-day landfill activities is the order in which the landfill is filled. The operational phases of the landfill have been changed to bring the area of the landfill closest to residential areas up to final grade first which will provide a visual barrier to subsequent landfilling operations. The Drawing 3 included in Appendix A shows the Phases of landfill closure.

#### **3.3.1 Liner**

The existing MSW landfill footprint is exempt from liner because of its pre-existing landfill status. No new lateral expansion of the MSW area is planned at this time; therefore, no liner construction is anticipated.

#### **3.3.2 Fill Method**

Wastes are dumped at the toe of work face and spread up the slope in one to two foot layers, keeping the working slope at a maximum of three horizontal to one vertical.

Work face dimensions are kept narrow enough to minimize blowing litter and reduce the amount of daily cover. Wastes are typically compacted by making three to five passes up and

down the slope. Compaction reduces litter, differential settlement and the quantities of cover soil needed. Compaction also extends the life of the site, reduces unit costs and leaves fewer voids to help reduce vector problems. Care is taken that no holes are left in the compacted waste. Voids are filled with additional waste as they develop.

### **3.3.3 Daily, Intermediate and Final Cover**

#### ***3.3.3.1 Daily and Intermediate Soil Cover***

Daily and intermediate cover soils must meet the 6-inch and 12-inch minimum requirements, respectively, as governed by R315-303-4. The borrow area for soil used as cover is west of the existing landfill. Additionally, cover soils are stockpiled in an area adjacent to the working face, which consists of material from the borrow area and minor amounts of soils that are brought to the landfill. Based upon the nature of available soil at the landfill; crushing and screening is not required to produce cover soils meeting the required specifications.

#### ***3.3.3.2 Alternate Daily Cover***

Waste is covered daily with 6 inches of soil at the end of the day. Logan Landfill has been approved to use alternative daily cover on as needed basis. Approved alternative daily cover is ConCover and wood-chips. The City has been using this synthetic material successfully as an alternative daily cover since the beginning of 1996.

#### ***3.3.3.3 Final Cover***

The Logan Landfill will initiate its final cover system within 30 days after disposal ceases in a particular landfill area and will complete the cover within 180 days after initiation. It is anticipated that final cover will be placed on the landfill cell in 4 separate events as sufficient area is brought to final elevation. The minimum area required for placement of final cover is approximately 18 acres, but also depends upon final cover configuration.

The engineered final cover system will prevent surface water infiltration (thereby minimizing leachate generation), control gas migration, maintain slope stability, control surface water and erosion, and be capable of supporting vegetative cover. The vegetative cover will be selected with shallow root systems to reduce cover soil penetration. The cover will be constructed as indicated on the permit drawings in Appendix A. The cover design presented in this permit is the same configuration as the cover in the initial permit package. The planned cover consists

of a minimum of 6-inches of topsoil, 18-inches of a vegetative support layer, 18-inches of a low permeability soils over the 6-inches of daily cover. Prior to construction of the final cover in each of the Phases, an engineering design package consisting of Drawings, Specifications and a QA/QC plan will be submitted to the DSHW for approval.

Future side slopes will be constructed and maintained at a maximum of 4H:1V with a single roadway bench that will approximately dissect the final slopes to minimize erosion and facilitate final cover maintenance. The roadway benches will slope up to 5% to ensure adequate drainage (while minimizing erosion) and will incorporate a drainage channel on the inside of the bench at the toe of the slope.

### **3.3.4 Elevation of Final Cover**

As illustrated on Drawing 4 (Appendix A), the ground surface around the landfill is approximately 4,420 and the final cover has a maximum elevation of 4,600 feet above mean sea level (msl).

### **3.3.5 Equipment Requirements and Availability**

Section 1.5 and 1.6 of Part II – General Report, contains a listing of equipment and personnel located at the landfill and the availability of additional equipment as needed.

## **3.4 MONITORING SYSTEM DESIGN**

### **3.4.1 Groundwater Monitoring System**

The existing groundwater monitoring plan is in accordance with R315-308-2 and is designed to monitor the impacts of the existing landfilling operation on the groundwater regime beneath the site. Wells are located both upgradient and downgradient of the existing landfill operations. The specifics of the groundwater monitoring system are provided in the Groundwater Monitoring Plan for the City of Logan Landfill (Kleinfelder 1998). The Table of Contents for the Groundwater Monitoring Plan is contained in Appendix C, the full plan has not been included as part of this permit renewal.

### **3.4.2 Surface Water**

In general, surface water will be prevented from running into the active landfill area by ditches and berms. Run-off from the final cover will also be managed by a combination of berms and ditches. The berms will be placed to divert the water around the active and final cover area to ditches that will drain to nearby drainages. Landfill staff will inspect the drainage system quarterly. Temporary repairs will be made to any observed deficiencies until permanent repairs can be scheduled. Landfill personnel or a licensed contractor will repair drainage facilities as required.

### **3.4.3 Leachate Collection**

A leachate collection system has not been installed nor will be installed due to the synthetic liner exemption status issued by the DSHW. A leachate monitoring and removal facility is in place at the southwest corner of the landfill. This system consists of approximately 300 feet of open joint drainpipe laid generally eastward from vertical access pipe. The vertical access pipe is topped with a standard, sewer manhole top section, ring and lid. The access point is used for inspection, measurement and pumping actions to remove leachate. Leachate removed from the landfill is currently transported to and treated at the Logan City Sewage Lagoons. Logan City is in the process of establishing a bio-treatment basin to treat leachate on adjacent property before discharging to the man-made wetlands.

### **3.4.4 Landfill Gas**

The specifics for monitoring landfill gas are detailed in the Operations Plan for the City of Logan Landfill (JMM, 1992). The table of contents for the Operations Plan is included in Appendix B.

## **3.5 DESIGN AND LOCATION OF RUN-ON/RUN-OFF CONTROL SYSTEM(S)**

### **3.5.1 Run-On from a 24-Hour, 25-Year Storm**

The location of active landfill is elevated above the surrounding topography; therefore, the potential for run-on does not exist.

### **3.5.2 Run-Off from a 24-Hour, 25-Year Storm**

The design for the landfill will incorporate a run-off control system that will divert the surface flows resulting from a 25-year, 24-hour storm (2.41 inches – NOAA Atlas 14) that falls on the landfill cover. The proposed final cover surface will be divided into 5 sub-areas by cap access roads which will be built up on berms above the final landfill cap. Collection ditches located along the proposed road(s) will collect surface runoff and transport it via the road/drop structures to the perimeter of the landfill where it will travel westward via the run-on diversion channels which are located on the north and south boundaries of the landfill. The road(s) and accompanying channels will break up the landfill cap into smaller drainage sub-areas, this also serves to reduce the peak depth/velocity of sheet flow and erosion of the surface cover. Runoff generated below the roads will also be collected in the run-off diversion channels. Preliminary calculations of the flow rates from the predicted runoff used for initial design of the storm water collection ditches are provided in Appendix H. Preliminary storm water collection ditch design calculations are also included in Appendix H. All ditches will be constructed with 2H:1V side slopes, maximum depth of flow was calculated to be 2.2 feet in the south run-off channel. Other ditches/roadway berms will be sized so that the maximum projected flow depth can be carried within the diversion channels. Evaluation of the erosion potential in the run-off control channels was also performed. This analysis indicated that flow velocities within the channels would erode the channel during the design storm, unless a fair stand of vegetative cover is cultivated within the channels. Until the vegetation in the channels becomes established, a temporary erosion resistant channel lining should be installed.

Surface water that flows off the intermediate cover will be intercepted by control berms and will be treated as non-contact run-off. The intermediate cover will be graded to provide the maximum slopes consistent with slope stability to minimize the amount of precipitation that would infiltrate into the waste materials.

Berms and ditches will be incorporated into the active landfill areas to direct the precipitation away from the working faces. Temporary, movable construction pumps will be used to dewater confined areas to minimize infiltration.

Logan Landfill personnel will be responsible for the maintenance of the slopes and drainage systems to ensure the efficient operation of the run-off system.

The Logan Landfill is designed and will be constructed so as not to cause point or non-point source discharges to surface waters, including wetlands, in violation of the CWA or in violation of State of Utah water quality management plans approved under Section 208 or 319 of the CWA. A copy of the current UPDES permit is included in Appendix I.

## **SECTION 4 – CLOSURE PLAN**

### **4.1 GENERAL**

The following section augments the existing Closure Plan found in the Operations Plan (JMM, 1992). The primary change to the existing closure scenario is that the landfill will be closed in 4 Phases rather than 5 with the first Phase starting in the southeast corner of the landfill. Closure will proceed from the southeast corner of the landfill and progress to the west with the final Phase of closure being the C&D area. Drawing 3 (Appendix A) show the closure Phases for the landfill.

The landfill is intended to be filled to design capacity in sequential Phases; however, it is possible that closure of the landfill may be necessitated earlier. The following sections discuss the closure of the landfill under present conditions (any point in time before total design capacity) and designed closure to full capacity in 4 Phases.

### **4.2 IMMEDIATE CLOSURE**

Although unlikely, it may become necessary or advantageous to close the Logan Landfill short of the final design capacity. Reasons for premature closure range from residential pressures, political pressures, alternate waste disposal options, to regulatory pressures.

Immediate closure would be closure of the landfill within the next 60 months. During that period of time, waste would need to be deposited and regarded in a manner to create a positively sloped final cover. Design, regulatory approval, and construction of a final cover system would need to be completed over the entire MSW landfill footprint. The approximate area that would constitute the final cover is approximately 95 acres.

### **4.3 PHASED CLOSURE**

The most probable scenario for the Logan Landfill is one of Phased Closure. Phased Closure would consist of closing the landfill under the following plan, in accordance with Rules R315-302-2 and 3. Drawing 4 (Appendix A) shows the contours of the final cover.

#### **4.3.1 Closure Phases**

The closure of the Logan Landfill consists of four Phases. The life of each of the individual Phases will depend upon the side slope of the MSW extending into surrounding Phases. The lateral extent and predicted life of each of the Phases is as follows:

##### ***4.3.1.1 Phase I***

Phase I is located in the southeast quadrant of the landfill. Phase I consists of approximately 936,000 square feet ranging in elevation from 4,430 to approximately 4,530 feet above mean sea level (msl). Phase I will provide landfilling capacity for approximately 3 years, reaching capacity in 2010. Phase I will provide approximately 850,000 cubic yards of landfill capacity.

##### ***4.3.1.2 Phase II***

Phase II is located immediately west of Phase I. Phase II consists of approximately 945,000 square feet ranging in elevation from 4,430 to approximately 4,580 feet above msl. Phase II will provide landfilling capacity for approximately 5 years, reaching capacity in 2015. Phase II will provide approximately 1,535,000 cubic yards of landfill capacity.

##### ***4.3.1.3 Phase III***

Phase III is located immediately west of Phase II. Phase III consists of approximately 1,210,000 square feet ranging in elevation from 4,430 to approximately 4,590 feet above msl. Phase III will provide landfilling capacity for approximately 5 years, reaching capacity in 2020. Phase III will provide approximately 2,065,000 cubic yards of landfill capacity.

#### **4.3.1.4 Phase IV**

Phase IV is located along the northern boundary of the landfill and represents the closure of the C&D area. Phase IV consists of approximately 514,000 square feet ranging in elevation from 4,430 to approximately 4,590 feet above msl. Phase IV will provide landfilling capacity for approximately 4 years, reaching capacity in 2024. Phase IV will provide approximately 1,370,000 cubic yards of landfill capacity.

#### **4.3.1.5 Total Capacity of the Site.**

The approximate quantity of air space consumed in the landfill, from 1960 through the year 2007 is estimated to be approximately 5,776,000 cubic yards (CY) including daily and intermediate cover. Based on the proposed modifications outlined in this permit, the volume of air space remaining until closure is estimated at 5,819,000 cubic yards. A projection of landfill use is provided in Appendix O. This analysis indicates that the landfill will reach its design capacity in approximately the year 2024.

### **4.3.2 Closure Procedures**

Closure activities for each Phase of the landfill will take place in accordance with the following procedures:

#### **4.3.2.1 Submittal of Plans, Specifications, and QA/QC Plan**

Four months before the intended closure of each of the Phases of landfilling, a design package consisting of drawings, construction specifications, and a QA/QC plan will be submitted to the DSHW. The DSHW will have approximately 60 days to review and comment on the adequacy of the drawings, specifications and quality assurance/quality control measure envisioned for the construction. Comments from DSHW will be incorporated into a final "bid" package for the cover construction.

#### **4.3.2.2 Formal Notification**

The Executive Secretary of the DSHW will be notified of the intent to implement the closure plan in whole or part, 60 days prior to the date projected for final receipt of waste.

#### **4.3.2.3 Additional Closure Activities**

Additional closure activities to close either the entire landfill or only one Phase are as follows:

- Regrading of all lower side slopes where current slopes are steeper than 4 horizontal to 1 vertical.
- Regrading of all upper side slopes and the top of the landfill to slopes between 4 horizontal to 1 vertical, but not flatter than 6 horizontal to 1 vertical.
- Finalization (including DSHW comments) of the final cover design package. Final Cover design package will include, at a minimum, plans, construction specifications, and QA/QC protocols to guide the construction of the final cover.
- Bidding and construction of final cover.
- Construction of a maintenance road over the cover.
- Construction of run-off control structures.
- Vegetation of the final cover soils.
- Preparation of As-Built Drawings.
- Inspection of final cover construction by Owner (City of Logan), Engineer (engineer of record) and DSHW personnel.
- Preparation of Certificate of Closure by a Utah registered Professional Engineer.
- Submittal of required documents to the State DSHW and to the Cache County Records office.

### **4.4 CLOSURE COSTS**

#### **4.4.1 Immediate Closure**

The closure of the landfill may occur before the final design capacity is reached. The costs associated with the closure of the entire landfill at once would entail the regrading of the entire landfill, engineering of final cover plans, specifications, and QA/QC plan. The cost of closure under current conditions is estimated at 4.6 million dollars. Details of this estimate are provided in Appendix P.

#### **4.4.2 Phased Closure**

If the landfiling operations continue as proposed by this permit application, the landfill will be closed in 4 Phases. The cost of closure for each of the Phases is as follows:

Phase I – \$ 1.2M

Phase II – \$ 1.8M

Phase III – \$ 2.1M

Phase IV – \$ 1.2M

Details of the closure cost estimates are provided in Appendix P.

## **SECTION 5 – POST-CLOSURE PLAN**

### **5.1 GENERAL**

The following section augments the existing Post-Closure Plan found in the Operations Plan (JMM, 1992). Post-closure financial assurance will provide for continued monitoring of groundwater, surface water, leachate, gas, and maintenance of the cover as described in the post-closure plan below. The total cost of post-closure care is estimated at \$883,960. A detailed analysis of annual post-closure costs is provided in Appendix P.

### **5.2 POST-CLOSURE PLAN**

In accordance with rules R315-302-2 and R315-303 post-closure activities at the landfill will continue for 30 years, or as long as the Executive Secretary of the Utah Solid and Hazardous Waste Control Board deems necessary for the Logan Landfill to be stabilized and to protect human health and the environment. The Post-Closure activities will include the following work:

#### **5.2.1 Changes to Record of Title**

A Plat Map and Statement of Fact concerning the location of the landfill shall be recorded with the Cache County recorder not later than 60 days after certification of closure. The recorded document will restrict future land use. Compatible land uses will be identified in the Logan City comprehensive planning documents.

#### **5.2.2 Monitoring Plan**

Post-closure activities will commence immediately upon closure of the total facility. The following activities augment the existing Closure Plan found in the Operations Plan (JMM, 1992).

The monitoring frequencies for the different media are shown in the following table. Post-closure monitoring will be conducted as follows:

### *Post-Closure Monitoring Schedule*

<b>Type</b>	<b>Frequency</b>	<b>Apparatus</b>
Groundwater	Semi-Annual	Refer to Groundwater Monitoring Plan
Surface Water	Semi-Annual	Refer to Operations Plan
Leachate	Quarterly	Sump at southwest corner of Landfill
Gas and Ambient Air	Quarterly	Refer to Operations Plan
Settlement	Annual	Bench mark survey

#### **5.2.2.1 Groundwater**

Groundwater will be monitored in accordance with procedures provided in the Logan City Groundwater Monitoring Plan previously submitted to the State of Utah DSHW. The Table of Contents for this Plan is contained in Appendix C; the full plan has not been included as part of this permit renewal.

#### **5.2.2.2 Surface Water**

Surface water will be monitored in accordance with procedures provided in the Operations Plan previously submitted to the State of Utah DSHW. The Table of Contents for this plan is provided in Appendix B.

#### **5.2.2.3 Leachate**

The presence of leachate will be monitored at the leachate collection sump located at the southwest corner of the landfill. Accumulations of leachate in excess of 1 foot will be removed and transported to the Logan City Sewage Lagoons for treatment. Logan City is in the process of establishing a bio-treatment basin to treat leachate on adjacent property.

#### **5.2.2.4 Gas Monitoring**

The specifics for monitoring landfill gas are detailed in the Operations Plan for the City of Logan Landfill (JMM, 1992). The Table of Contents for this plan is provided in Appendix B.

#### **5.2.2.5 *Settlement***

At final closure, the boundary markers used to designate closed areas of the landfill will be used to measure settlement of refuse materials. Additional survey markers will be placed as necessary to monitor areas of suspected movement. Ground elevation will be measured at the base of each boundary marker.

#### **5.2.3 *Inspection and Maintenance***

Monitoring facilities, fences, roads, buildings, cover, and run-on and run-off systems will be inspected in accordance with the schedule presented in the cost estimate (Appendix P).

Facilities will be inspected for damage, deterioration, and impaired function with regard to the listed standards and original design. Deficiencies will be corrected promptly. Deficiencies, repairs, and restoration of function will be documented in the landfill record.

## **SECTION 6 – POST-CLOSURE LAND USE**

Logan City will design a post-closure land use plan to be implemented at the landfill within 5 years prior to the end of the landfill's life. Logan City will select an end use for the landfill consistent with good landfiling practices. The final land use selected for the landfill will be based upon maintaining a functional landfill cover. Land use activities will be approved by Logan City prior to implementation. Typical end uses range from recycling operations (which complement existing operations) to recreational activities. Since the closure of the site may be over 20 years away and with the potential development options that could occur in this area, it is not currently possible to establish a land use plan that will be consistent with surrounding land uses and the needs of Logan City.

## **SECTION 7 – FINANCIAL ASSURANCE**

### **7.1 GENERAL**

The most up-to-date financial assurance documents are provided in the latest Annual Report Submitted to the State of Utah, DSHW. The 2006 Annual Report is included in Appendix D.

### **7.2 CORRECTIVE ACTION**

At present, there are no known requirements for corrective actions. Logan Landfill is currently under assessment monitoring for groundwater and any issues raised pertaining to the groundwater will be addressed when conclusive results are obtained. The costs of any potential corrective action are unknown at this time and are not included in either the Closure or Post-Closure, or Financial Assurance costs.

## SECTION 8 – REFERENCES

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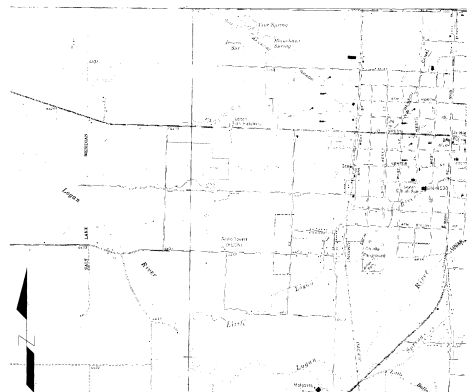


# L GAN



4

SHEET TITLE
LOGAN CITY LANDFILL
TITLE
SHEET



### SITE VICINITY MAP



1 TITLE SHEET  
2 GENERAL ARRANGEMENT  
3 CLOSURE PHASES  
4 FINAL GRADING PLAN  
5 ELEVATION VIEWS (1&2)  
6 ELEVATION VIEWS (3 & 4)  
7 ACCESS ROAD PROFILES  
8 DRAINAGE AREAS  
9 DETAILS

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2

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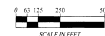
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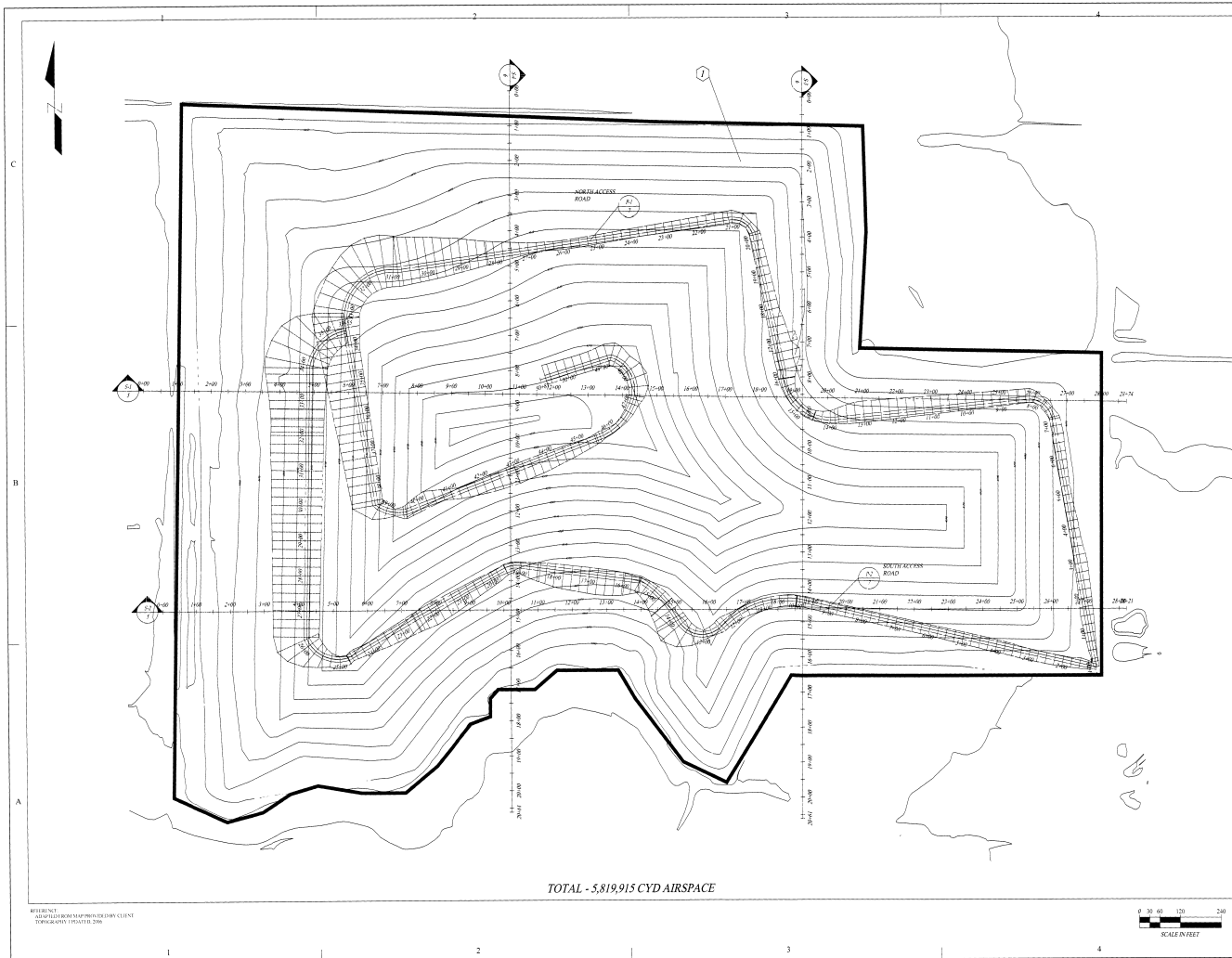
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PHASE 4 (C & D ONLY) - 1,369,693 CYD AIRSPACE



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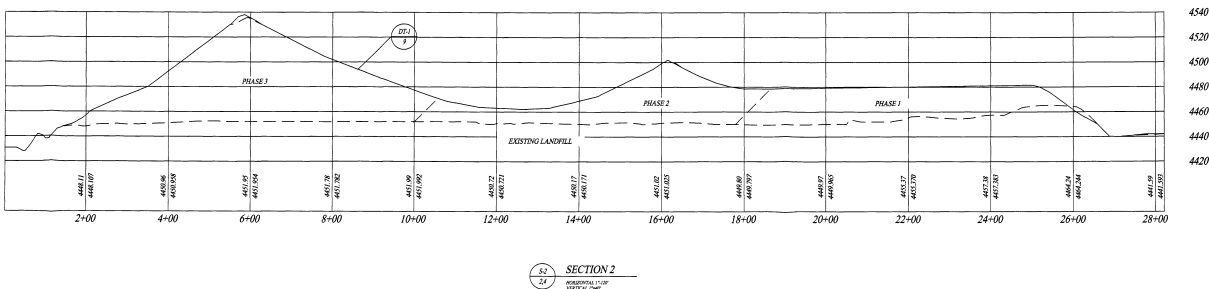
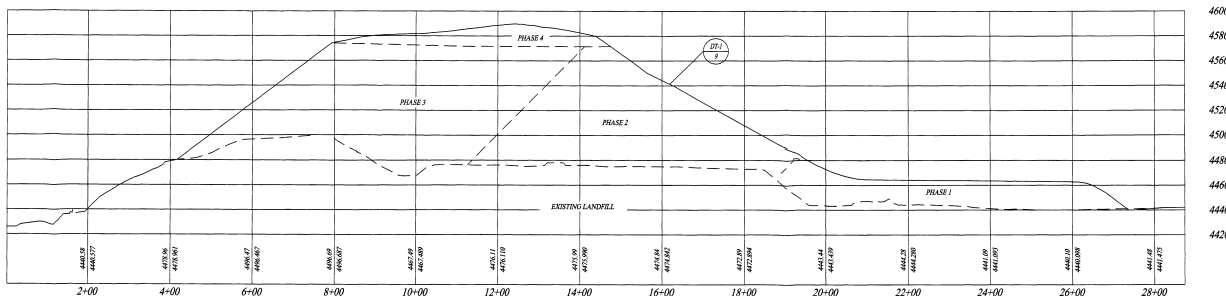
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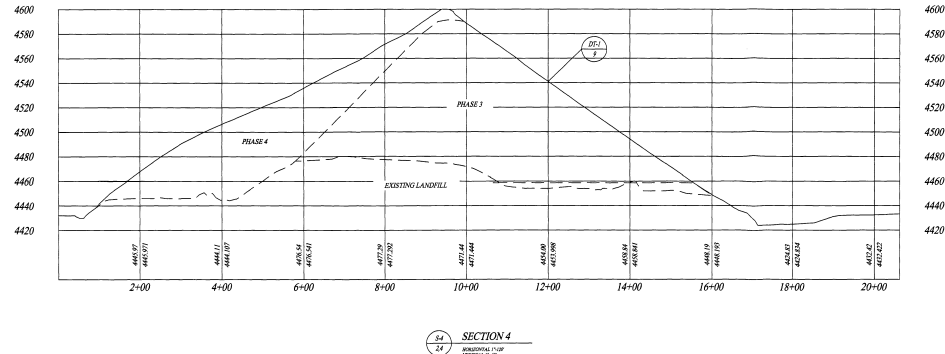
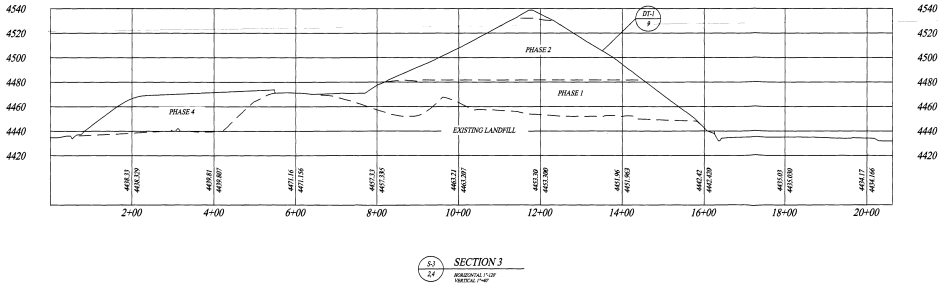
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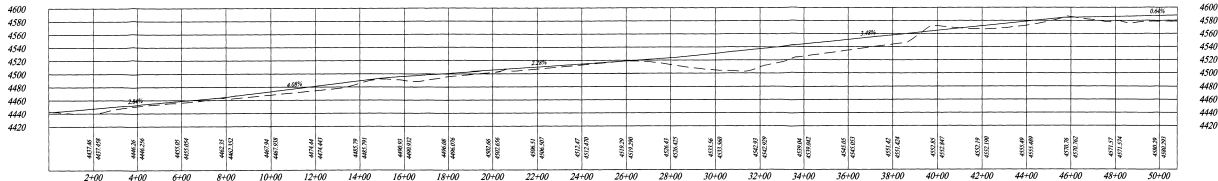


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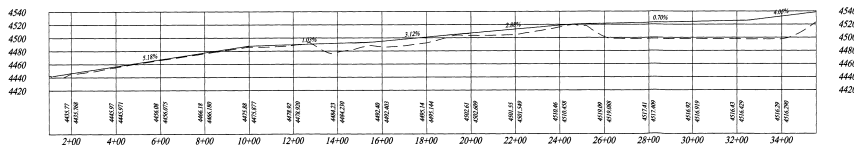
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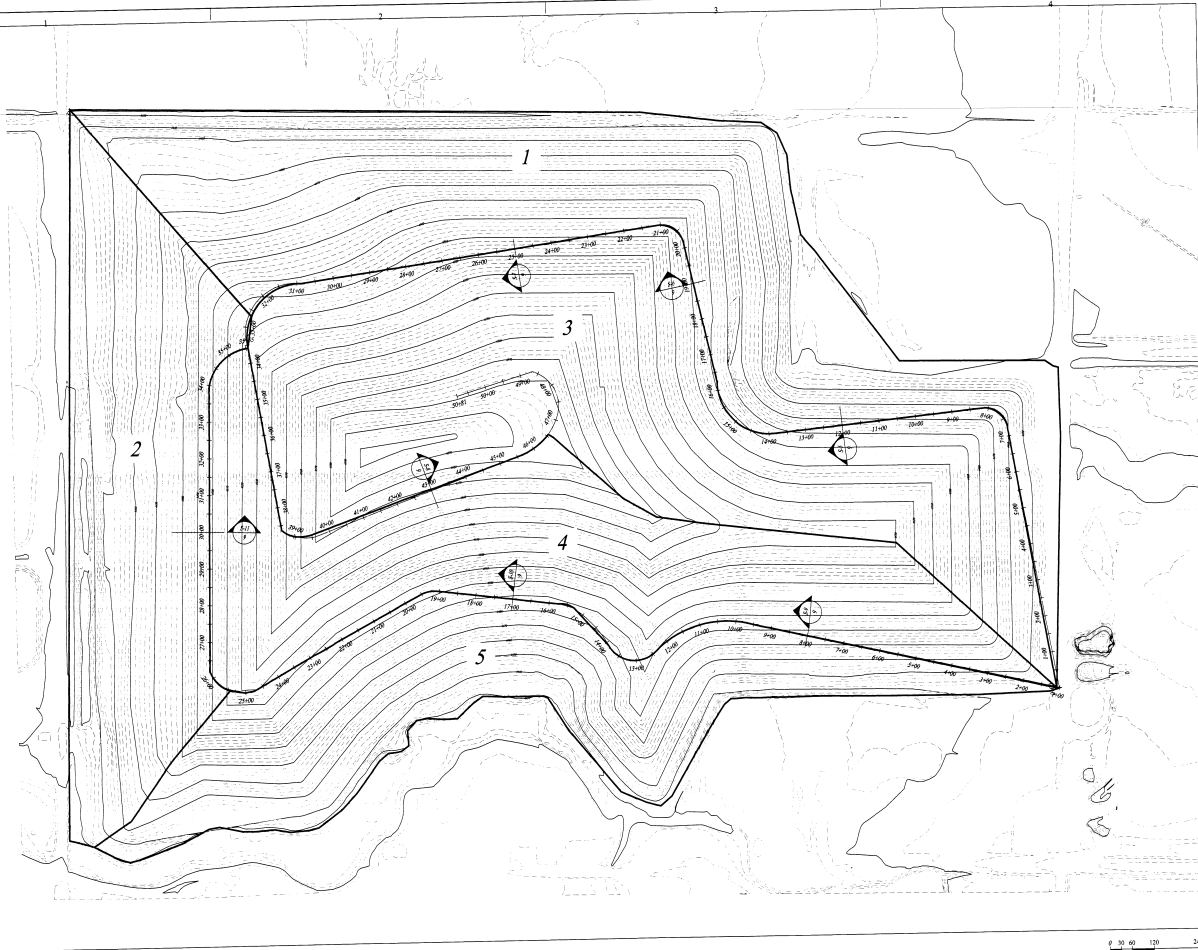
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ELEVATION  
VIEW (3 & 4)



PROFILE 1 - NORTH ACCESS ROAD



PROFILE 2 - SOUTH ACCESS ROAD



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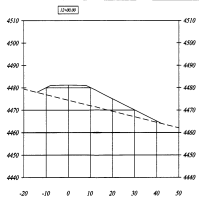


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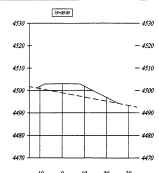
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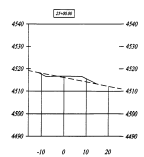
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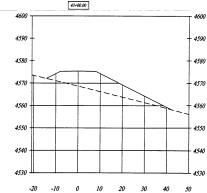
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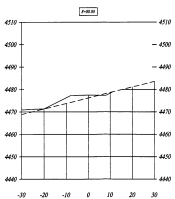
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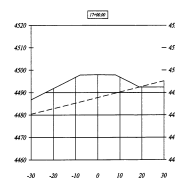
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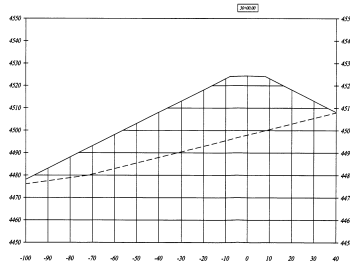
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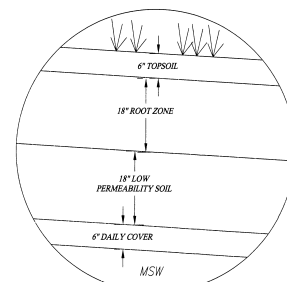
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**S-10 SECTION 10**  
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**S-11 SECTION 11**  
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**DT-1 TYPICAL COVER**  
5.6 NTS





**CITY OF LOGAN, UTAH**

**LOGAN CITY SANITARY LANDFILL**



**OPERATIONS MANUAL**

**March 2003**



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**GROUNDWATER MONITORING PLAN**  
**(Revised February 1998)**  
**Logan City Sanitary Landfill**  
**Logan, Utah**

February 27, 1998

This document was prepared for use only by the client, only for the purposes stated, and within a reasonable time from issuance. Non-commercial, educational and scientific use of this report by regulatory agencies is regarded as a "fair use" and not a violation of copyright. Regulatory agencies may make additional copies of this document for internal use. Copies may also be made available to the public as required by law. The reprint must acknowledge the copyright that permission to reprint has been received.

WILKINSON

00001

A Report Prepared For:

The City of Logan  
255 North Main  
Logan, Utah 84323-0527

Kleinfelder File No. 35-812601-001

**GROUNDWATER MONITORING PLAN**  
Logan City Sanitary Landfill  
Logan, Utah

Prepared by:



Matthew L. Crockett  
Project Scientist



Renee D. Zollinger, R.G.  
Senior Geologist

**Kleinfelder, Inc.**  
2749 East Parley's Way, Suite 100  
Salt Lake City, UT 84109  
(801) 466-6769

February 27, 1998

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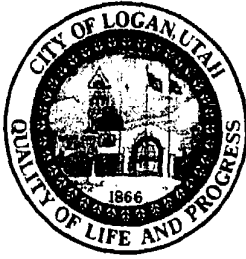
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MICKELSON





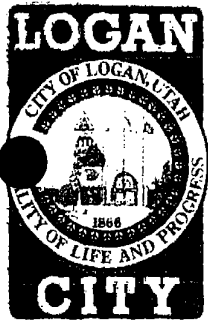
**City of Logan  
Environmental Department**

450 North 1000 West  
Logan, Utah 84321-7806  
E-Mail: [ihamud@loganutah.org](mailto:ihamud@loganutah.org)  
Phone (435) 716-9752  
Fax: (435) 716-9751

---

**City of Logan  
Solid Waste Facility  
Annual Report  
2006**

**January 1, 2006 - December 31, 2006**



February 27, 2007

Utah Division of Environmental Quality  
Division of Solid and Hazardous Waste  
P.O. Box 144880  
Salt Lake City, UT 84114-4880

Randy Watts

Attention: Dennis R. Downs, Director

Subject: Solid Waste Facility Annual Report

I am pleased to submit the attached Logan City Sanitary Landfill Annual Report. The report is based on the information requested in the Solid Waste Facility Annual Report Forms from the Department of Environmental Quality Division of Solid and Hazardous Waste.

255 North Main Street  
Logan, Utah 84321

Phone: (435) 716-9000  
(435) 716-9001

This report includes: the Class I Solid Waste Annual Report Form, the Class IVb Solid Waste Annual Report Form, the Compost Facility Annual Report Form, an Executive Summary, Attachments I – IV and Appendices A and B.

[www.loganutah.org](http://www.loganutah.org)

Attachments:

- I. Financial Assurance
- II. Groundwater Monitoring Report
- III. Explosive Gas Monitoring Report
- IV. Training Report

Appendices:

- A. Tonnage Report
- B. Calculations and References

If you have any questions regarding this report, please feel free to call Issa Hamud at (435) 716 – 9752.

Sincerely,

Randy Watts  
Mayor

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Mail to:  
Dennis R. Downs, Director  
Division of Solid and Hazardous Waste  
P.O. Box 144880  
Salt Lake City, Utah 84114-4880

## 2007 SOLID WASTE LANDFILL ANNUAL REPORT

For Calendar year 2006 or most recent fiscal year

### Administrative Information (Please enter all the information requested below)

Facility Name: Logan City Sanitary Landfill

Facility Mailing Address: 450 N 1000 W

(Number & Street, Box and/or Route)

City: Logan

Zip Code: 84321

County: Cache

### Owner

Name: City of Logan Phone No.: ( 435 ) 716 - 9000

Mailing Address: 255 N Main

(Number & Street, Box and/or Route)

City: Logan

State: Utah

Zip Code: 84321

Contact's Name: Issa Hamud Title: Environmental Director

Contact's Mailing Address: 450 N 1000 W

Phone No.: ( 435 ) 716 - 9752 Contact's Email Address: IHAMUD@loganutah.org

### Operator (Complete this section only if the operator is not an employee of the Owner shown above)

Name: N/A Phone No.: ( ) N/A

Mailing Address: N/A

(Number & Street, Box and/or Route)

City: N/A

State: N/A

Zip Code: N/A

Contact's Name: N/A Title: N/A

Contact's Mailing Address: N/A

Phone No.: ( ) N/A Contact's Email Address: N/A

### Facility Type and Status

☒ Class I

☐ Class IIIb

☐ Class V

☐ Class II

☐ Class IVa

☐ Class VI

☐ Class IIIa

☐ Class IVb

Does the facility have a construction and demolition (C/D) cell as part of the permit (not operated under a separate permit number)? Yes \_\_\_\_\_ No ✓

If facility was permanently closed during the year enter date closed: N/A

### Annual Disposal

Total tons received at facility for disposal:					
Waste Type	Waste Origin		Total	Measurement	
	In-State	Out-of-State		Tons	Cubic Yards
Municipal	<u>89,485</u>		<u>89,485</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Industrial				<input type="checkbox"/>	<input type="checkbox"/>
C/D <sup>1</sup>				<input type="checkbox"/>	<input type="checkbox"/>

<sup>1</sup>C/D waste includes all waste going to a Class IV or VI landfill cell

**Conversion Factor Used**

- ☐ No conversion factors used  
☐ Conversion factor from rules (R315-302-2(4)(c)) used  
☒ Site specific conversion used Please list: 0.33 tons per unweighed pickup/trailer

**Recycling**

Tons Recycled: 5,627 Tons

(Should not be included in the tons or cubic yards (please circle correct units) disposed above also excludes waste diverted to compost. Compost should be reported on separate form.)

**Utah Disposal Fee**

Disposal Fee Required

Yes ☒ No ☐

Fee Type

Per Ton ☐ Annual ☒

Disposal Fee Paid

Municipal \$ 12,250.00

Industrial \$ \_\_\_\_\_

C/D

Annual

\$ \_\_\_\_\_

\$ \_\_\_\_\_

**Financial Assurance**

Current Closure Cost Estimate: \$ 6,074,884.00

Current Post-Closure Cost Estimate: \$ 1,513,600.00

Current Financial Assurance Mechanism: Government Trust and Investment Fund

(ie. Bond, Trust Fund, Corporate or government Test etc.)

Financial Assurance Mechanism Holder: PTIF Account # 0871

(ie. Name of Bond Company, Bank etc.. If PTIF Account give account number)

Current Amount or Balance in Mechanism: \$ 1,482,768.59

**Other Required Reports**

**Financial Assurance:** Each facility must recalculate the cost of closure and post-closure care to account for inflation and design changes each year. The recalculation, along with proof that the new cost estimates are fully covered by the assurance mechanism currently be utilized, must be submitted. Facilities that are using a trust account should include a copy of the most recent account statement.

**Note** Facilities using "Local Government Financial Test" or the "Corporate Financial Test" must provide the information required in R315-309-8(4) or R315-309-9(3) each year.

**Ground Water Monitoring:** Each facility that is required to monitor ground water must submit a ground water monitoring report that contains water elevations, sampling results, and statistical analyses. Check box if facility is exempt from ground water monitoring ☐

**Explosive Gas Monitoring:** A gas monitoring report must be included unless the facility is a Class II landfill that has receive an exemption, a Class III, IV, or VI landfill, or any other facility that has an exemption. Check box if facility is exempt from gas monitoring ☐

**Training Report:** A report of all training programs or procedures completed by facility personnel during the year.

**Signature:** 

**Date:** 2/27/07

Signature should be by an executive officer, general partner, proprietor, elected official, or a duly authorized representative. A duly authorized representative must meet the requirements of the solid waste rules (UAC R315-310-2(4)(d)).

Print name: Issa Hamud

Title: Environmental Department Director

Mail to:  
Dennis R. Downs, Director  
Division of Solid and Hazardous Waste  
P.O. Box 144880  
Salt Lake City, Utah 84114-4880

## 2007 SOLID WASTE LANDFILL ANNUAL REPORT

For Calendar year 2006 or most recent fiscal year

### Administrative Information (Please enter all the information requested below)

Facility Name: Logan City Sanitary Landfill

Facility Mailing Address: 450 N 1000 W

(Number & Street, Box and/or Route)

City: Logan

Zip Code: 84321

County: Cache

#### Owner

Name: City of Logan Phone No.: ( 435 ) 716 - 9000

Mailing Address: 255 N Main

(Number & Street, Box and/or Route)

City: Logan

State: Utah

Zip Code: 84321

Contact's Name: Issa Hamud

Title: Environmental Director

Contact's Mailing Address: 450 N 1000 W

Phone No.: ( 435 ) 716 - 9752 Contact's Email Address: IHAMUD@loganutah.org

#### Operator (Complete this section only if the operator is not an employee of the Owner shown above)

Name: N/A Phone No.: ( ) N/A

Mailing Address: N/A

(Number & Street, Box and/or Route)

City: N/A

State: N/A

Zip Code: N/A

Contact's Name: N/A

Title: N/A

Contact's Mailing Address: N/A

Phone No.: ( ) N/A Contact's Email Address: N/A

### Facility Type and Status

☐ Class I

☐ Class IIIb

☐ Class V

☐ Class II

☐ Class IVa

☐ Class VI

☐ Class IIIa

☒ Class IVb

Does the facility have a construction and demolition (C/D) cell as part of the permit (not operated under a separate permit number)? Yes \_\_\_\_\_ No ✓

If facility was permanently closed during the year enter date closed: N/A

### Annual Disposal

Total tons received at facility for disposal:						
Waste Type	Waste Origin		Total		Measurement	
	In-State	Out-of-State			Tons	Cubic Yards
Municipal					<input type="checkbox"/>	<input type="checkbox"/>
Industrial					<input type="checkbox"/>	<input type="checkbox"/>
C/D <sup>1</sup>	25,464		25,464		<input checked="" type="checkbox"/>	<input type="checkbox"/>

<sup>1</sup>C/D waste includes all waste going to a Class IV or VI landfill cell

**Conversion Factor Used**

- ☐ No conversion factors used  
☐ Conversion factor from rules (R315-302-2(4)(c)) used  
☒ Site specific conversion used Please list: 0.33 tons per unweighed pickup/trailer

**Recycling**

Tons Recycled: N/A Tons/Cubic Yds  
(Should not be included in the tons or cubic yards (please circle correct units) disposed above also excludes waste diverted to compost. Compost should be reported on separate form.)

**Utah Disposal Fee**

Disposal Fee Required Yes ☐ No ☒ Fee Type Per Ton ☐ Annual ☐

Disposal Fee Paid

Municipal	\$		C/D	\$	
Industrial	\$		Annual	\$	

**Financial Assurance**

Current Closure Cost Estimate: \$ 6,074,884.00  
Current Post-Closure Cost Estimate: \$ 1,513,600.00  
Current Financial Assurance Mechanism: Government Trust and Investment Fund  
(ie. Bond, Trust Fund, Corporate or government Test etc.)  
Financial Assurance Mechanism Holder: PTIF Account # 0871  
(ie. Name of Bond Company, Bank etc.. If PTIF Account give account number)  
Current Amount or Balance in Mechanism: \$ 1,482,768.59

**Other Required Reports**

**Financial Assurance:** Each facility must recalculate the cost of closure and post-closure care to account for inflation and design changes each year. The recalculation, along with proof that the new cost estimates are fully covered by the assurance mechanism currently be utilized, must be submitted. Facilities that are using a trust account should include a copy of the most recent account statement.

**Note** Facilities using "Local Government Financial Test" or the "Corporate Financial Test" must provide the information required in R315-309-8(4) or R315-309-9(3) each year.

**Ground Water Monitoring:** Each facility that is required to monitor ground water must submit a ground water monitoring report that contains water elevations, sampling results, and statistical analyses. Check box if facility is exempt from ground water monitoring ☐

**Explosive Gas Monitoring:** A gas monitoring report must be included unless the facility is a Class II landfill that has receive an exemption, a Class III, IV, or VI landfill, or any other facility that has an exemption. Check box if facility is exempt from gas monitoring ☐

**Training Report:** A report of all training programs or procedures completed by facility personnel during the year.

**Signature:** [Signature]

**Date:** 2/27/07

Signature should be by an executive officer, general partner, proprietor, elected official, or a duly authorized representative. A duly authorized representative must meet the requirements of the solid waste rules (UAC R315-310-2(4)(d)).

**Print name:** Issa Hamud

**Title:** Environmental Department Director

Mail to:  
Dennis R. Downs, Director  
Division of Solid and Hazardous Waste  
P.O. Box 144880  
Salt Lake City, Utah 84114-4880

## 2007 SOLID WASTE COMPOST FACILITY ANNUAL REPORT

For Calendar year 2006 or most recent fiscal year

### Administrative Information Please enter all the information requested below

Facility Name: Logan City Sanitary Landfill

Facility Mailing Address: 450 N 1000 W

(Number & Street, Box and/or Route)

City: Logan

Zip Code: 84321

County: Cache

#### Owner

Name: City of Logan Phone No.: (435) 716-9000

Mailing Address: 255 N Main

(Number & Street, Box and/or Route)

City: Logan

State: Utah

Zip Code: 84321

Contact's Name: Issa Hamud Title: Environmental Director

Contact's Mailing Address: 450 N 1000 W

Phone No.: (435) 716-9752 Contact's Email Address: IHAMUD@loganutah.org

#### Operator (Complete this section only if the operator is not an employee of the Owner shown above)

Name: N/A Phone No.: ( ) N/A

Mailing Address: N/A

(Number & Street, Box and/or Route)

City: N/A

State: N/A

Zip Code: N/A

Contact's Name: N/A Title: N/A

Contact's Mailing Address: N/A

Phone No.: ( ) N/A Contact's Email Address: N/A

### Facility Status

☒ Currently in Operation

☐ Closed - Date: \_\_\_\_\_

(The "Closed - Date" is the date that all compost was removed from the site)

### Annual Totals

Waste received in reporting period: 11,500 Tons

Product removed from site during period: 11,664 cubic yds

Has facility operated according to approved plan of operation ☒ yes ☐ no

If no please contact the solid waste section at 801-538-6170

Signature: \_\_\_\_\_

Date: 2/27/07

Signature should be by an executive officer, general partner, proprietor, elected official, or a duly authorized representative. A duly authorized representative must meet the requirements of the solid waste rules (UAC R315-310-2(4)(d)).

Print Name: Issa Hamud

Title: Environmental Department Director

# Executive Summary

During the year 2006 the Logan City Environmental Department has continued to serve the citizens of Cache County by providing them access to the Logan Landfill, a permitted facility for the disposal of solid waste. The Logan Landfill includes a Class I Landfill, a Class IVb Landfill, a Compost Facility, a Used Oil Collection Center and a Household Hazardous Waste Collection Program.

During the year 2006, the Logan Landfill was open to the public for 303 days. The Class I landfill received 89,485 tons of solid waste and the Class IVb landfill received 25,464 tons of construction and demolition waste. The Composting Facility received 11,500 tons of green waste material and was able to donate and sell 11,664 cubic yards of useable product. The Used Oil Collection Center at the landfill shipped out 4,235 gallons of used oil for recycling and the Household Hazardous Waste Collection Program collected and shipped out 367 drums of Household Hazardous Waste, with a total combined container volume of 19,742 gallons.

The landfill received and was able to divert away from the landfill for proper disposal or recycling; 2,514 tires, 334 refrigerators, 443 computer monitors/ televisions and 920 large batteries.

The most notable change that occurred at the Logan Landfill this past year was with respect to waste diversion away from the landfill. In the spring of the year the Cache County Council approved a measure to implement a county-wide single stream curbside recycling program. This program was to be implemented in two phases over a two year period. By the end of the summer over half of the county's residents had received a 90 gallon blue can for single stream curbside recycling that began to be serviced every two weeks. This program will likely divert more material away from the Logan Landfill than any other program implemented in the past. In the past year, due to the efforts made by the Logan City Environmental Department and the cooperation of many citizens and businesses, 5,627 tons of recyclable material was diverted away from the landfill. That is 34% more recyclable material than was diverted last year.

**Financial Assurance**  
**(Attachment I)**



Office of the Finance Director  
255 North Main Street • Logan, Utah 84321 • Phone (435) 716-9000 • Fax (435) 716-9001

November 15, 2006

Matt Sullivan, Environmental Scientist  
Department of Environmental Quality  
Division of Solid and Hazardous Waste  
288 North 1460 West  
P.O. Box 144880  
Salt Lake City, Utah 84114-4880

Mr Sullivan:

I am submitting the following information to meet the financial assurance requirements for closure and post-closure costs at the Logan Landfill in accordance with the *Utah Solid Waste Permitting and Management Rules* Subsection R315-309-8(4)(a).

Requirement 4(a)(i)

The current cost estimate covered by the financial test is \$7,588,484. Please refer to the attached schedules for the supporting details. These schedules have been taken from the Logan City Sanitary Landfill Class IV Permit Renewal and cost estimates updated by Logan City. The cost estimates used during the year ended June 30, 2006 were prepared by the engineering firm of IGES.

Requirement 4(a)(ii)

The requirements of 8(2) are met as follows:

- 8(2)(a) The City's outstanding general obligation debt is currently rated as A by Moody's.
- 8(2)(b) Not applicable.
- 8(2)(c) Enclosed is a copy of the City of Logan's audited financial statements, which have been prepared in conformity with Generally Accepted Accounting Principles (GAAP).

- 8(2)(d) Footnote 16 on page 59 of the City's financial statements makes the necessary references to closure and post-closure costs.

The requirements of 8(6) are met as follows:

- 8(6)(a) The closure and post-closure costs assured by the financial test are below 43% of the City's total annual revenue. The City's total annual revenue for its enterprise and governmental funds for the year ended June 30, 2006 was \$82,835,076. Governmental fund revenues can be found on page 28 of the audited financial statements. Enterprise fund revenues can be found on page 34 of the financial statements. The maximum assurance for Logan City at 43% is \$35,619,083.
- 8(6)(b) The City is not assuring any other environmental obligation through a financial test.

If you have any questions about the information provided, please call.

Sincerely,



Richard Anderson  
Director of Finance  
City of Logan

## Section 1.0 - Engineering

## PHASE I

ESTIMATED DATE OF CLOSURE-2007, AREA-794,000 FT 20

[illegible]

## PHASE II

**(ESTIMATED DATE OF CLOSURE-2017, AREA-13-0,000 FT SQ)**

Category	Amount	Count	Total
LS	\$3,000	1	\$3,000
NA			
LS	\$2,500	1	\$2,500
LS	\$15,000	1	\$15,000
LA	\$7,500	1	\$7,500
LS	\$7,500	1	\$7,500
LS	\$25,000	1	\$25,000
NA			\$0
NA			\$0
Engineering Subtotal			62,000

## Section 2.8 - Construction

## PHASE I

CONSTRUCTION		ESTIMATE	REVISION	DATE	BY
2.1	Final Cover System				
2.1.1	Site Preparation/Soil Remediation	ACRE	\$1,000	18.1	\$11,100
2.1.2	Gas Collection Layer/Flare	NA			\$
2.1.3	Low permeability Layer (Soil - N/A applicable)				
a	Soil Purchase	NA			\$
b	Soil Processing (Soil)	CY	\$0.50	43,888	\$21,944
c	Soil Transportation	CY	\$1.50	43,888	\$65,832
d	Soil Placement	CY	\$1.00	43,888	\$43,888
e	Soil Amendment (compact)	CY	\$7.00	43,888	\$307,216
2.1.4	Low permeability Layer (Synthetic - N/A applicable)				
a	Geotextile	NA			\$
b	GCL	NA			\$
c	Geomembrane (HDPE/PVC/LDPE, etc.)	NA			\$
2.1.5	Drainage Layer (Soil - N/A applicable)				
a	Geotextile	NA			\$
b	Sand/Gravel	NA			\$
2.1.6	Drainage Layer (Synthetic - N/A applicable)				
a	Geotextile	NA			\$
b	Geomembrane	NA			\$
2.1.7	Evaporation Protection Soil Layer				
a	Soil Purchase	NA			\$
b	Soil Processing (Soil)	CY	\$0.50	43,888	\$21,944
c	Soil Transportation	CY	\$1.50	43,888	\$65,832
d	Soil Placement	CY	\$1.00	43,888	\$43,888
e	Soil Amendment (compact)	CY			\$
2.1.8	Gravel Layer				
a	Soil Purchase	NA			\$
b	Soil Processing (Soil)	CY	\$0.50	14,629	\$7,315
c	Soil Transportation	CY	\$1.50	14,629	\$21,944
d	Soil Placement	CY	\$1.50	14,629	\$21,944
e	Soil Amendment	NA			\$
2.1.9	Remediation				
a	Soilfill	ACRE	\$800	18.1	\$14,480
b	Fertilizing	ACRE	\$800	18.1	\$14,480
c	Mulch	ACRE	\$200	18.1	\$3,620
d	Topsoil	ACRE	\$200	18.1	\$3,620
2.2	Stormwater Protection Structures				
a	Culverts	EA	1,500	\$3	\$4,500
b	Pipes	NA	400	\$3	\$1,200
c	Drainage/Basins	FT	2,500	\$3	\$7,500
d	Detention Basins	NA			\$
2.3	Gas Collection System				
a	Design	NA			\$
b	Additional Equipment / Installation	NA			\$
2.4	Leachate Collection System				
a	Design	NA			\$
b	Additional Equipment / Installation	NA			\$
2.5	Groundwater Monitoring System				
a	Monitor Well Installation	NA			\$
b	Monitor Well Abandonment	NA			\$
2.6	Site Security				
a	Fencing, signs, etc.	NA			\$
b	Fencing and Gates	NA			\$
2.7	Miscellaneous				
a	Performance Bonds	LS	\$12,000	1	\$12,000
b	Contract/Legal Fees	LS	\$3,000	1	\$3,000
				Construction Subtotal	\$712,047

## PHASE IV

TABLE II			
Category	Value	Count	Total
ACRE	\$1,000	30.8	\$30,800
NA			\$0
NA			\$0
CY	\$0.50	74,611	\$37,306
CY	\$1.50	74,611	\$111,917
CY	\$1.00	74,611	\$74,611
CY	\$7.00	74,611	\$522,777
NA			\$0
NA			\$0
NA			\$0
NA			\$0
NA			\$0
NA			\$0
NA			\$0
CY	\$0.50	74,611	\$37,306
CY	\$1.50	74,611	\$111,917
CY	\$1.00	74,611	\$74,611
CY			\$0
NA			\$0
CY	\$0.50	24,870	\$12,435
CY	\$1.50	24,870	\$37,306
CY	\$1.50	24,870	\$37,306
NA			\$0
ACRE	\$800	30.8	\$24,644
ACRE	\$800	30.8	\$24,644
ACRE	\$200	30.8	\$6,166
ACRE	\$200	30.8	\$6,166
EA	\$1,500	1	\$1,500
NA	\$1,100	10	\$11,000
ET	\$4,000	5	\$20,000
NA			\$0
NA			\$0
NA			\$0
NA			\$0
NA			\$0
NA			\$0
LS	\$20,000	1	\$20,000
LS	\$5,000	1	\$5,000
Construction Related			\$1,206,970

LS - LUMP SUM  
NA - NOT APPLICABLE  
EA - EACH  
CY - CUBIC YARD  
FT - FEET

Total	\$774,547
10% Contingency	\$77,455
Subtotal Closure Cost	\$852,001
Inflation Factor 1.1040	
Inflated Closure Cost (2% Inflation)	\$854,609

Total	\$1,268,479
10% Contingency	\$126,948
Subtotal Closure Cost	\$1,396,427
Inflation Factor 1.3458	
Inflated Closure Cost (25% inflation)	\$1,879,312

# CLOSURE COSTS (PHASE III & PHASE IV)

## Section 1.0 - Engineering

### PHASE III

ESTIMATED DATE OF CLOSURE-2002, AREA-1,045,000 FT SQ

Item	Unit	Quantity	Unit Cost	Total Cost
1.1 Topographic Survey	LS	\$5,000	1	\$5,000
1.2 Boundary Survey for Closure	NA			
1.3 Site Evaluation	LS	\$2,500	1	\$2,500
1.4 Development of Plans	LS	\$15,000	1	\$15,000
1.5 Contract Administration - (Bidding and Award)	LA	\$7,500	1	\$7,500
1.6 Administrative Costs - (Certification of Final Cover and Closure Rating)	LS	\$7,500	1	\$7,500
1.7 Project Management - (Construction Observation and Testing)	LS	\$25,000	1	\$25,000
1.8 Monitor Well Consultant Cost	NA			\$0
1.9 Other Environmental Permit Costs	NA			\$0
Engineering Subtotal				\$62,500

### PHASE IV

ESTIMATED DATE OF CLOSURE-2004, AREA-975,000 FT SQ

Item	Unit	Quantity	Unit Cost	Total Cost
1.1 Topographic Survey	LS	\$5,000	1	\$5,000
1.2 Boundary Survey for Closure	NA			
1.3 Site Evaluation	LS	\$2,500	1	\$2,500
1.4 Development of Plans	LS	\$15,000	1	\$15,000
1.5 Contract Administration - (Bidding and Award)	LA	\$7,500	1	\$7,500
1.6 Administrative Costs - (Certification of Final Cover and Closure Rating)	LS	\$7,500	1	\$7,500
1.7 Project Management - (Construction Observation and Testing)	LS	\$25,000	1	\$25,000
1.8 Monitor Well Consultant Cost	NA			\$0
1.9 Other Environmental Permit Costs	NA			\$0
Engineering Subtotal				70,000

## Section 2.0 - Construction

### PHASE III

Item	Unit	Quantity	Unit Cost	Total Cost
2.1 Final Cover System				
2.1.1 Site Preparation/ Site Remediation	ACRE	\$1,000	24.6	\$24,600
2.1.2 Gas Collection Layer/Design	NA			\$0
2.1.3 Low permeability Layer Soil - <i>N/A</i> (Asbestos)				\$0
a Soil Purchase	NA			\$0
b Soil Processing (load)	CY	\$0.50	58,055	\$29,028
c Soil Transportation	CY	\$1.50	58,055	\$87,083
d Soil Placement	CY	\$1.00	58,055	\$58,055
e Soil Amendment	CY	\$7.00	58,055	\$406,385
2.1.4 Low permeability Layer Synthetic - <i>N/A</i> (Asbestos)				\$0
a Geotextile	NA			\$0
b GCL	NA			\$0
c Geomembrane (HDPE/PVC/LLDPE, etc...)	NA			\$0
2.1.5 Drainage Layer Soil - <i>N/A</i> (Asbestos)				\$0
a Geotextile	NA			\$0
b Sand/Gravel	NA			\$0
2.1.6 Drainage Layer Synthetic - <i>N/A</i> (Asbestos)				\$0
a Geotextile	NA			\$0
b Geocut/Geomembrane	NA			\$0
2.1.7 Drainage Protection Soil Layer				\$0
a Soil Purchase	NA			\$0
b Soil Processing (load)	CY	\$0.50	58,055	\$29,028
c Soil Transportation	CY	\$1.50	58,055	\$87,083
d Soil Placement	CY	\$1.00	58,055	\$58,055
e Soil Amendment	CY			\$0
2.1.8 Trench Layer				\$0
a Soil Purchase	NA			\$0
b Soil Processing (load)	CY	\$0.50	19,332	\$9,666
c Soil Transportation	CY	\$1.50	19,332	\$28,998
d Soil Placement	CY	\$1.50	19,332	\$28,998
e Soil Amendment	NA			\$0
2.1.9 Remediation				\$0
a Soiling	ACRE	\$800	24.6	\$19,920
b Fertilizing	ACRE	\$800	24.6	\$19,920
c Muck	ACRE	\$200	24.6	\$4,920
d Topsoil	ACRE	\$200	24.6	\$4,920
2.2 Stormwater Protection Structures				\$0
a Culverts	EA	\$1,200	1	\$1,200
b Pipes	NA			\$0
c Ditches/Ditches	FT	\$3,500	5	\$17,500
d Detention Basins	NA			\$0
2.3 Gas Collection System				\$0
a Design	NA			\$0
b Additional Equipment / Installation	NA			\$0
2.4 Leachate Collection System				\$0
a Design	NA			\$0
b Additional Equipment / Installation	NA			\$0
2.5 Groundwater Monitoring System				\$0
a Monitor Well Installation	NA			\$0
b Monitor Well Abandonment	NA			\$0
2.6 Site Security				\$0
a Lighting, signs, etc...	NA			\$0
b Fencing and Gates	NA			\$0
2.7 Miscellaneous				\$0
a Performance Bonds	LS	\$22,000	1	\$22,000
b Contract/Legal fees	LS	\$5,000	1	\$5,000
Construction Subtotal				\$949,416

### PHASE IV

Item	Unit	Quantity	Unit Cost	Total Cost
2.1 Final Cover System				
2.1.1 Site Preparation/ Site Remediation	ACRE	\$1,000	22.4	\$22,400
2.1.2 Gas Collection Layer/Design	NA			\$0
2.1.3 Low permeability Layer Soil - <i>N/A</i> (Asbestos)				\$0
a Soil Purchase	NA			\$0
b Soil Processing (load)	CY	\$0.50	54,166	\$27,083
c Soil Transportation	CY	\$1.50	54,166	\$81,249
d Soil Placement	CY	\$1.00	54,166	\$54,166
e Soil Amendment	CY	\$7.00	54,166	\$379,162
2.1.4 Low permeability Layer Synthetic - <i>N/A</i> (Asbestos)				\$0
a Geotextile	NA			\$0
b GCL	NA			\$0
c Geomembrane (HDPE/PVC/LLDPE, etc...)	NA			\$0
2.1.5 Drainage Layer Soil - <i>N/A</i> (Asbestos)				\$0
a Geotextile	NA			\$0
b Sand/Gravel	NA			\$0
2.1.6 Drainage Layer Synthetic - <i>N/A</i> (Asbestos)				\$0
a Geotextile	NA			\$0
b Geocut/Geomembrane	NA			\$0
2.1.7 Drainage Protection Soil Layer				\$0
a Soil Purchase	NA			\$0
b Soil Processing (load)	CY	\$0.50	54,166	\$27,083
c Soil Transportation	CY	\$1.50	54,166	\$81,249
d Soil Placement	CY	\$1.00	54,166	\$54,166
e Soil Amendment	CY			\$0
2.1.8 Trench Layer				\$0
a Soil Purchase	NA			\$0
b Soil Processing (load)	CY	\$0.50	18,855	\$9,428
c Soil Transportation	CY	\$1.50	18,855	\$28,283
d Soil Placement	CY	\$1.50	18,855	\$28,283
e Soil Amendment	NA			\$0
2.1.9 Remediation				\$0
a Soiling	ACRE	\$800	22.4	\$17,920
b Fertilizing	ACRE	\$800	22.4	\$17,920
c Muck	ACRE	\$200	22.4	\$4,480
d Topsoil	ACRE	\$200	22.4	\$4,480
2.2 Stormwater Protection Structures				\$0
a Culverts	EA	\$1,200	1	\$1,200
b Pipes	NA			\$0
c Ditches/Ditches	FT	\$3,000	5	\$15,000
d Detention Basins	NA			\$0
2.3 Gas Collection System				\$0
a Design	NA			\$0
b Additional Equipment / Installation	NA			\$0
2.4 Leachate Collection System				\$0
a Design	NA			\$0
b Additional Equipment / Installation	NA			\$0
2.5 Groundwater Monitoring System				\$0
a Monitor Well Installation	NA			\$0
b Monitor Well Abandonment	NA			\$0
2.6 Site Security				\$0
a Lighting, signs, etc...	NA			\$0
b Fencing and Gates	NA			\$0
2.7 Miscellaneous				\$0
a Performance Bonds	LS	\$22,000	1	\$22,000
b Contract/Legal fees	LS	\$5,000	1	\$5,000
Construction Subtotal				\$471,632

Total \$1,011,916  
10% Contingency \$101,192  
Subtotal Closure Cost \$1,113,107  
Inflation Factor 1.4839  
Inflated Closure Cost (2% Inflation) \$1,633,966

Total \$941,862  
10% Contingency \$94,186  
Subtotal Closure Cost \$1,036,048  
Inflation Factor 1.5469  
Inflated Closure Cost (2% Inflation) \$1,600,997

# POST-CLOSURE COSTS (30 YEARS)

## Section 1.0 - Engineering

Item	Description	Unit	Quantity	Unit Cost	Total Cost
1.1	Post-Closure Plan	LS	1	\$5,000	\$5,000
1.2	Annual Report (including results from gas, leachate, and ground water sampling - details of maintenance performed)	LS	30	\$5,000	\$150,000
a	Biannual Site Inspection	LS	60	\$400	\$24,000
b	Plan Update	LS	30	\$300	\$9,000
	Engineering Subtotal				\$188,000

## Section 2.0 - Gas Collection System - Sampling

Item	Description	Unit	Quantity	Unit Cost	Total Cost
2.1	Sample Collection	LS	60	\$250	\$15,000
2.2	Sample Analysis	NA			\$0
2.3	Report (Part of Annual Report)				\$0
	Gas Collection System - Sampling Subtotal				\$15,000

## Section 3.0 - Leachate Collection System - Sampling

Item	Description	Unit	Quantity	Unit Cost	Total Cost
3.1	Sample Collection	NA			\$0
3.2	Sample Analysis	NA			\$0
3.3	Report (Part of Annual Report)				\$0
	Leachate Collection System - Sampling Subtotal				\$0

## Section 4.0 - Ground Water Monitoring System - Sampling

Item	Description	Unit	Quantity	Unit Cost	Total Cost
4.1	Sample Collection	LS	60	\$2,500	\$150,000
4.2	Sample Analysis	LS	60	\$15,000	\$900,000
4.3	Report (Part of Annual Report)				\$0
	Ground Water Collection System - Sampling Subtotal				\$1,050,000

## Section 5.0 - Facility Operations and Maintenance

Item	Description	Unit	Quantity	Unit Cost	Total Cost
5.1	Cover				
a	Soil Replacement	LS	30	\$1,000	\$30,000
b	Vegetation/Renewing	LS	30	\$500	\$15,000
5.2	Storm Water Protection Structures				
a	Ditch and Culvert Maintenance	LS	30	\$500	\$15,000
b	Storm and Basin Maintenance	LS	30	\$500	\$15,000
5.3	Gas Collection System				
a	System Operation	NA	30		\$0
b	System Repair	LS	30	\$200	\$6,000
5.4	Leachate Collection System				
a	System Operation	NA	30		\$0
b	System Repair	NA	30		\$0
5.5	Ground Water Monitoring System				
a	System Operation	NA	30		\$0
b	System Repair	LS	30	\$500	\$15,000
5.6	Site Security				
a	Lighting, signs, etc.	LS	30	\$500	\$15,000
b	Fencing and Gates	LS	30	\$500	\$15,000
5.7	Miscellaneous				
a					
b					
	Facility Operation and Maintenance Subtotal				\$126,000

Total \$1,376,000  
 10% Contingency \$137,600  
 Total Post-Closure Cost \$1,513,600

**City of Logan**  
**Statement of Revenues, Expenditures, and Changes in Fund Balances**  
**Governmental Funds**  
**For the Year Ended June 30, 2006**

	General	Redevelopment Agency	Other Governmental Funds	Total Governmental Funds
<b>REVENUES</b>				
Property tax	\$ 2,023,316	\$ 1,000,880	\$ 1,093,553	\$ 4,717,759
Sales tax	776,906	-	1,571,127	9,856,513
Franchise tax	4,549,254	-	-	4,549,254
Licenses and permits	1,414,970	-	-	1,444,970
Intergovernmental	2,721,903	-	1,865,443	4,591,346
Administrative fees	2,551,295	-	-	2,551,295
Charges for services	2,613,138	-	1,705,917	4,318,955
Fines	949,657	-	47,597	957,234
Investment earnings	258,469	8,917	120,115	387,501
Contributions from private sources	-	-	141,364	141,364
Miscellaneous	330,126	319,863	200,179	910,172
Total revenues	25,700,416	1,929,675	7,551,295	34,661,386
<b>EXPENDITURES</b>				
Current:				
General government	5,611,918	-	-	5,611,918
Public safety	8,629,065	-	1,121,127	9,750,197
Public works	5,286,154	500,619	2,232,767	8,019,540
Parks, recreation and culture	2,414,955	-	1,120,909	3,535,864
Debt service:				
Principal	1,416,518	451,747	13,755	1,882,020
Interest	535,716	225,945	4,917	766,578
Debt insurance cost	114,371	-	-	114,371
Capital outlay				
Public safety	41,321	-	121,131	162,452
Public works	234,020	115,518	597,199	946,737
Parks, recreation and culture	101,561	-	437,507	539,068
Total expenditures	24,335,696	1,409,579	7,557,228	33,302,503
Revenues in excess of expenditures	1,364,720	439,096	(505,933)	1,246,883
<b>OTHER FINANCING SOURCES (USES)</b>				
Transfers in	4,431,458	-	829,139	5,260,597
Transfers out	(1,308,679)	(258,242)	(122,762)	(1,689,683)
Debt issuance	5,820,000	-	193,300	6,013,300
Debt premium	259,265	-	-	259,265
Debt retirement	(6,951,528)	-	-	(6,951,528)
Sale of fixed assets	-	-	1,029,000	1,029,000
Total other financing sources (uses)	3,770,606	(258,242)	2,027,376	5,539,740
Net change in fund balances	5,035,726	211,564	1,521,451	6,768,741
Fund balances, beginning	3,603,945	(1,548,421)	2,393,314	4,710,838
Fund balances, ending	\$ 8,949,176	\$ (1,336,857)	\$ 3,914,765	\$ 11,529,086

The accompanying notes are an integral part of this statement.

City of Logan  
Statement of Revenues, Expenses, and Changes in Net Assets  
Proprietary Funds  
For the Year Ended June 30, 2008

	Business-Type Activities - Enterprise Funds						Governmental Activities - Information Services ISF
	Water and Sewer	Sewer Treatment	Electric	Environmental Health	Storm Water Management	Golf Course	Total
Operating revenues:							
Charges for sales and services	\$ 7,019,434	\$ 3,247,471	\$ 24,967,792	\$ 3,183,426	\$ 823,328	\$ 842,354	\$ 49,084,783
Unbilled sales	394,370	48,474	1,652,607	-	-	-	1,465,451
Connection fees	132,201	-	273,136	-	-	-	565,337
Total operating revenues	7,546,005	3,295,944	26,893,525	3,183,426	823,328	842,354	51,114,881
Operating expenses:							
Personal services	1,037,172	125,719	2,692,370	2,539,082	12,115	389,040	7,166,687
Administrative fees	715,441	141,661	798,140	408,728	3,000	-	2,646,898
Contractual services	631,845	49,484	6,491	298,880	3,943	8,926	917,512
Operating and maintenance	1,631,937	240,842	22,790,924	1,602,768	57,480	350,476	26,744,367
Landfill closure/postclosure costs	-	-	-	100,239	-	-	100,239
Depreciation and amortization	450,954	493,069	1,686,629	1,365,474	50,627	126,404	4,323,367
Total operating expenses	5,607,319	1,008,743	27,973,858	5,823,081	113,605	869,774	41,965,270
Operating income/loss	2,668,766	2,197,201	2,519,637	1,360,344	689,763	(45,420)	9,189,711
Nonoperating revenues (or expenses):							
Intergovernmental revenue	236,300	-	-	1,100	-	-	240,100
Interest	80,881	15,912	4,144	206,170	412	7,931	367,310
Gain (loss) on sale of assets	51,500	-	975	73,470	-	-	122,645
Miscellaneous	194,977	344	1,745,729	217,562	35,524	4,485	2,256,422
Capital improvement development fees	50,700	-	-	-	-	-	50,700
Interest expense and fiscal charges	(1,233,383)	(347,065)	(181,553)	(112,037)	(12,659)	(61,740)	(1,906,907)
Total nonoperating revenue (expense)	290,445	(309,419)	2,519,295	589,296	51,677	(49,324)	27,918
Income (loss) before transfers	2,959,211	1,797,782	5,038,932	1,949,640	770,840	(95,744)	11,220,281
Transfers:							
Transfer in	-	-	-	-	-	384,740	384,740
Transfer out	(725,845)	(209,485)	(2,845,812)	(774,092)	-	-	(4,614,843)
Capital contributions	604,335	-	-	-	270,230	-	615,135
Change in net assets	2,638,561	1,528,611	693,479	1,175,058	981,140	265,596	7,303,689
Total net assets, beginning	2,182,732	7,617,514	13,616,762	13,124,640	176,751	2,343,622	6,462,507
Total net assets, ending	\$ 4,821,293	\$ 9,146,125	\$ 14,310,241	\$ 14,299,698	\$ 1,157,891	\$ 2,609,218	\$ 13,766,194

The accompanying notes are an integral part of this statement.

CITY OF LOGAN  
NOTES TO THE FINANCIAL STATEMENTS

**Note 16 - Environmental Health Landfill Closure and Postclosure Costs**

The City owns and operates a landfill that manages solid waste for the entire county. State and federal laws require the City to close the landfill when it reaches capacity and to monitor and maintain the site for thirty subsequent years. The City recognizes a portion of these costs in each operating period even though actual payments will not occur until the landfill is closed. The amount recognized each year is based on the percent landfill capacity used as of the balance sheet date. There are several methodologies used to close a landfill, which result in varying costs and landfill capacities. The following cost estimates are based on the current methodology, which includes a dome-shaped landfill cap.

As of June 30, 2006, the City had incurred a liability of \$2,672,826 which represents the cost reported to date based on a 48.4 percent estimate of the landfill capacity used. Closure and postclosure costs were estimated to be \$7,588,484 in a 2005 engineering study. The remaining estimated liability is \$3,915,658, which will be recognized as the remaining capacity is used (estimated closing date is 2023). The estimated cost of closure and postclosure care is subject to change.

According to state and federal law, the City is required to establish a trust fund with an independent third party to accumulate assets needed for the payout of closure costs. Currently, assets reported as restricted assets totaling \$1,144,113 are held for this purpose.

Annually, the City files a financial assurance report for closure and post-closure costs with the Utah Department of Environmental Quality. The Department of Environmental Quality subsequently analyzes the sufficiency of reserve funds to meet future costs.

**Note 17 - Redevelopment Agency**

In accordance with the Utah State Code, all municipalities having established Redevelopment Agencies are required to disclose certain revenues and expenditures associated with the various project areas. The revenues and expenditures associated with the City's redevelopment areas are as follows:

Logan Downtown RDA	
Revenues:	
Tax increment collected	\$ -
Expenditures:	
Acquisition of property	-
Site improvements	-
Installation of utilities	-
Administrative costs	28,098
Tax increment rebate	-
Debt:	
City of Logan	-



**OFFICERS:**  
Paul D. Simkins, CPA  
Michael C. Kidman, CPA, MBA  
Brent S. Sandberg, CPA  
Brett C. Hugie, CPA  
Mark E. Lora, CPA  
H. Paul Gibbons, CPA

**Independent Accountants' Report  
on Applying Agreed-upon Procedures**

City of Logan  
255 North Main  
Logan, UT 84321

We have performed the procedures listed below, which were agreed to by the City of Logan (the City) and the State of Utah Department of Environmental Quality solely to assist the specified parties in evaluating the City's compliance with the financial assurance requirements for closure and post-closure costs at the Logan Landfill as allowed by the *Utah Solid Waste Permitting and Management Rules* subsection R315-309-8 as of June 30, 2006. Management is responsible for the City's compliance with those requirements. This agreed-upon procedures engagement was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants. The sufficiency of these specified procedures is solely the responsibility of those parties specified in this report. Consequently, we make no representation regarding the sufficiency of the procedures described below either for the purpose for which this report has been requested or for any other purpose.

Our procedures and findings are as follows:

**Procedure:** Confirm that the City's financial statements were prepared in accordance with Generally Accepted Accounting Principles (GAAP).

**Finding:** We hereby confirm that the City's financial statements were prepared in accordance with Generally Accepted Accounting Principles (GAAP).

**Procedure:** Confirm that the City has not operated at a deficit equal to 5% or more, of the total annual revenue in each of the past two fiscal years.

**Finding:** The City's audited financial statements for the years ending June 30, 2006 and 2005, respectively, show that the City has not operated at a deficit.

*Member of the American Institute of Certified Public Accountants*

Procedure: Confirm that the City has not received an adverse opinion, disclaimer of opinion, or other qualified opinion on its audited financial statements.

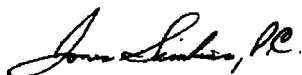
Finding: We hereby confirm that the City has not received an adverse opinion, disclaimer of opinion, or other qualified opinion on its June 30, 2006, audited financial statements.

Procedure: Determine that the City's outstanding general obligation bonds are secured or have a rating not lower than Baa as issued by Moody's or BBB as issued by Standard and Poor's.

Finding: The City's outstanding general obligation bonds are currently rated A by Moody's.

We were not engaged to, and did not, conduct an examination, the objective of which would be an expression of an opinion on compliance. Accordingly, we do not express such an opinion. Had we performed additional procedures, other matters might have come to our attention that would have been reported to you.

This report is intended solely for the use of the City of Logan and the State of Utah Department of Environmental Quality and is not intended to be and should not be used by anyone other than these specified parties.



JONES SIMKINS, P.C.  
November 15, 2006

## STATEMENT OF ACCOUNT

**PTIF****UTAH PUBLIC TREASURERS' INVESTMENT FUND**

Edward T. Alter, Utah State Treasurer, Fund Manager

E315 State Capitol Complex

Salt Lake City, Utah 84114-2315

Local Call (801) 538-1042 Toll Free (800) 395-7665

www.treasurer.utah.gov

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ESCROW-LOGAN CITY LANDFILL  
 ATTN: ROBERT BURTON  
 PO BOX 527  
 LOGAN UT 84321

01/31/06

STATEMENT OF ACCOUNT NO: 0871

REPORT PERIOD: 01/01/06 TO 01/31/06

DATE	REFERENCE	DEPOSITS	WITHDRAWALS	BALANCE
01/01/06	BEGBAL	0.00	0.00	1,410,906.74
01/31/06	NETEARN	5,177.60	0.00	1,416,084.34
01/31/06	ENDBAL	0.00	0.00	1,416,084.34

## ACCOUNT SUMMARY

BEGINNING BALANCE:	1,410,906.74
DEPOSITS IN THE PERIOD:	5,177.60
WITHDRAWALS IN THE PERIOD:	0.00
ENDING BALANCE:	1,416,084.34
GROSS EARNINGS:	5,177.60
ADMINISTRATIVE FEE (0.0000%)	0.00
NET EARNINGS:	5,177.60
AVERAGE DAILY BALANCE:	1,410,906.74
GROSS EARNINGS RATE:	4.2616%
NET EARNINGS RATE:	4.2616%

12-31-05 GASB 31 FAIR VALUE  
 PER SHARE FACTOR IS .999564



## STATEMENT OF ACCOUNT

**PTIF****UTAH PUBLIC TREASURERS' INVESTMENT FUND**

Edward T. Alter, Utah State Treasurer, Fund Manager

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ESCROW-LOGAN CITY LANDFILL  
ATTN: ROBERT BURTON  
PO BOX 527  
LOGAN UT 84321

02/28/06

STATEMENT OF ACCOUNT NO: 0871

REPORT PERIOD: 02/01/06 TO 02/28/06

DATE	REFERENCE	DEPOSITS	WITHDRAWALS	BALANCE
02/01/06	BEGBAL	0.00	0.00	1,416,084.34
02/28/06	NETEARN	4,867.12	0.00	1,420,951.46
02/28/06	ENDBAL	0.00	0.00	1,420,951.46

## ACCOUNT SUMMARY

BEGINNING BALANCE:	1,416,084.34
DEPOSITS IN THE PERIOD:	4,867.12
WITHDRAWALS IN THE PERIOD:	0.00
ENDING BALANCE:	1,420,951.46
GROSS EARNINGS:	4,867.12
ADMINISTRATIVE FEE (0.0000%)	0.00
NET EARNINGS:	4,867.12
AVERAGE DAILY BALANCE:	1,416,084.34
GROSS EARNINGS RATE:	4.4190%
NET EARNINGS RATE:	4.4190%

+ EQUIVALENT 365 DAY RATE IS +  
+ 4.4804% +

## STATEMENT OF ACCOUNT

**PTIF****UTAH PUBLIC TREASURERS' INVESTMENT FUND**

Edward T. Alter, Utah State Treasurer, Fund Manager

E315 State Capitol Complex

Salt Lake City, Utah 84114-2315

Local Call (801) 538-1042 Toll Free (800) 395-7665

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ESCROW-LOGAN CITY LANDFILL

ATTN: ROBERT BURTON

PO BOX 527

LOGAN UT 84321

03/31/06

STATEMENT OF ACCOUNT NO: 0871

REPORT PERIOD: 03/01/06 TO 03/31/06

DATE	REFERENCE	DEPOSITS	WITHDRAWALS	BALANCE
03/01/06	BEGBAL	0.00	0.00	1,420,951.46
03/31/06	NETEARN	5,573.65	0.00	1,426,525.11
03/31/06	ENDBAL	0.00	0.00	1,426,525.11

## ACCOUNT SUMMARY

BEGINNING BALANCE:	1,420,951.46
DEPOSITS IN THE PERIOD:	5,573.65
WITHDRAWALS IN THE PERIOD:	0.00
ENDING BALANCE:	1,426,525.11
GROSS EARNINGS:	5,573.65
ADMINISTRATIVE FEE (0.0000%)	0.00
NET EARNINGS:	5,573.65
AVERAGE DAILY BALANCE:	1,420,951.46
GROSS EARNINGS RATE:	4.5551%
NET EARNINGS RATE:	4.5551%

+ EQUIVALENT 365 DAY RATE IS +  
 + 4.6184% +

## STATEMENT OF ACCOUNT

**PTIF****PUBLIC TREASURERS' INVESTMENT FUND**

Edward T. Alter, Utah State Treasurer, Fund Manager

E315 State Capitol Complex

Salt Lake City, Utah 84114-2315

Local Call (801) 538-1042 Toll Free (800) 395-7665

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ESCROW-LOGAN CITY LANDFILL

ATTN: ROBERT BURTON

PO BOX 527

LOGAN UT 84321

04/30/06

STATEMENT OF ACCOUNT NO: 0871

REPORT PERIOD: 04/01/06 TO 04/30/06

DATE	REFERENCE	DEPOSITS	WITHDRAWALS	BALANCE
04/01/06	BEGBAL	0.00	0.00	1,426,525.11
04/30/06	NETEARN	5,596.79	0.00	1,432,121.90
04/30/06	ENDBAL	0.00	0.00	1,432,121.90

## ACCOUNT SUMMARY

BEGINNING BALANCE:	1,426,525.11
DEPOSITS IN THE PERIOD:	5,596.79
WITHDRAWALS IN THE PERIOD:	0.00
ENDING BALANCE:	1,432,121.90
GROSS EARNINGS:	5,596.79
ADMINISTRATIVE FEE (0.0000%)	0.00
NET EARNINGS:	5,596.79
AVERAGE DAILY BALANCE:	1,426,525.11
GROSS EARNINGS RATE:	0.0000%
NET EARNINGS RATE:	0.0000%

+ EQUIVALENT 365 DAY RATE IS +  
 + 4.7734% +

## STATEMENT OF ACCOUNT

**PTIF****PUBLIC TREASURERS' INVESTMENT FUND**

Edward T. Alter, Utah State Treasurer, Fund Manager

E315 State Capitol Complex

Salt Lake City, Utah 84114-2315

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ESCROW-LOGAN CITY LANDFILL  
 ATTN: ROBERT BURTON  
 PO BOX 527  
 LOGAN UT 84321

05/31/06

STATEMENT OF ACCOUNT NO: 0871

REPORT PERIOD: 05/01/06 TO 05/31/06

DATE	REFERENCE	DEPOSITS	WITHDRAWALS	BALANCE
05/01/06	BEGBAL	0.00	0.00	1,432,121.90
05/31/06	NETEARN	5,989.34	0.00	1,438,111.24
05/31/06	ENDBAL	0.00	0.00	1,438,111.24

## ACCOUNT SUMMARY

BEGINNING BALANCE:	1,432,121.90
DEPOSITS IN THE PERIOD:	5,989.34
WITHDRAWALS IN THE PERIOD:	0.00
ENDING BALANCE:	1,438,111.24
GROSS EARNINGS:	5,989.34
ADMINISTRATIVE FEE (0.0000%)	0.00
NET EARNINGS:	5,989.34
AVERAGE DAILY BALANCE:	1,432,121.90
GROSS EARNINGS RATE:	4.8567%
NET EARNINGS RATE:	4.8567%

+ EQUIVALENT 365 DAY RATE IS +  
 + 4.9241% +

## STATEMENT OF ACCOUNT

**PTIF****UTAH PUBLIC TREASURERS' INVESTMENT FUND**

Edward T. Alter, Utah State Treasurer, Fund Manager  
 E315 State Capitol Complex  
 Salt Lake City, Utah 84114-2315  
 Local Call (801) 538-1042 Toll Free (800) 395-7665  
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ESCROW-LOGAN CITY LANDFILL  
 ATTN: ROBERT BURTON  
 PO BOX 527  
 LOGAN UT 84321

06/30/06

STATEMENT OF ACCOUNT NO: 0871

REPORT PERIOD: 06/01/06 TO 06/30/06

DATE	REFERENCE	DEPOSITS	WITHDRAWALS	BALANCE
06/01/06	BEGBAL	0.00	0.00	1,438,111.24
06/30/06	NETEARN	6,001.64	0.00	1,444,112.88
06/30/06	ENDBAL	0.00	0.00	1,444,112.88

## ACCOUNT SUMMARY

BEGINNING BALANCE:	1,438,111.24
DEPOSITS IN THE PERIOD:	6,001.64
WITHDRAWALS IN THE PERIOD:	0.00
ENDING BALANCE:	1,444,112.88
GROSS EARNINGS:	6,001.64
ADMINISTRATIVE FEE (0.0000%)	0.00
NET EARNINGS:	6,001.64
AVERAGE DAILY BALANCE:	1,438,111.24
GROSS EARNINGS RATE:	5.0079%
NET EARNINGS RATE:	5.0079%

IF ERRORS-CONTACT STEVE AT THE  
 STATE AUDITORS 801-808-0704

## STATEMENT OF ACCOUNT



PTIF

## PUBLIC TREASURERS' INVESTMENT FUND

Edward T. Alter, Utah State Treasurer, Fund Manager

E315 State Capitol Complex

Salt Lake City, Utah 84114-2315

Local Call (801) 538-1042 Toll Free (800) 395-7665

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ESCROW-LOGAN CITY LANDFILL  
 ATTN: ROBERT BURTON  
 PO BOX 527  
 LOGAN UT 84321

file

07/31/06

STATEMENT OF ACCOUNT NO: 0871

REPORT PERIOD: 07/01/06 TO 07/31/06

DATE	REFERENCE	DEPOSITS	WITHDRAWALS	BALANCE
07/01/06	BEGBAL	0.00	0.00	1,444,112.88
07/31/06	NETEARN	6,332.28	0.00	1,450,445.16
07/31/06	ENDBAL	0.00	0.00	1,450,445.16

## ACCOUNT SUMMARY

BEGINNING BALANCE:	1,444,112.88
DEPOSITS IN THE PERIOD:	6,332.28
WITHDRAWALS IN THE PERIOD:	0.00
ENDING BALANCE:	1,450,445.16
GROSS EARNINGS:	6,332.28
ADMINISTRATIVE FEE (0.0000%):	0.00
NET EARNINGS:	6,332.28
AVERAGE DAILY BALANCE:	1,444,112.88
GROSS EARNINGS RATE:	5.0921%
NET EARNINGS RATE:	5.0921%

06-30-06 GASB 31 FAIR VALUE  
 PER SHARE FACTOR IS .99968

## STATEMENT OF ACCOUNT

**PTIF****PUBLIC TREASURERS' INVESTMENT FUND**

Edward T. Alter, Utah State Treasurer, Fund Manager

E315 State Capitol Complex

Salt Lake City, Utah 84114-2315

Local Call (801) 538-1042 Toll Free (800) 395-7665

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ESCROW-LOGAN CITY LANDFILL  
 ATTN: ROBERT BURTON  
 PO BOX 527  
 LOGAN UT 84321

08/31/06

STATEMENT OF ACCOUNT NO: 0871

REPORT PERIOD: 08/01/06 TO 08/31/06

DATE	REFERENCE	DEPOSITS	WITHDRAWALS	BALANCE
08/01/06	BEGBAL	0.00	0.00	1,450,445.16
08/31/06	NETEARN	6,460.23	0.00	1,456,905.39
08/31/06	ENDBAL	0.00	0.00	1,456,905.39

## ACCOUNT SUMMARY

BEGINNING BALANCE:	1,450,445.16
DEPOSITS IN THE PERIOD:	6,460.23
WITHDRAWALS IN THE PERIOD:	0.00
ENDING BALANCE:	1,456,905.39
GROSS EARNINGS:	6,460.23
ADMINISTRATIVE FEE (0.0000%)	0.00
NET EARNINGS:	6,460.23
AVERAGE DAILY BALANCE:	1,450,445.16
GROSS EARNINGS RATE:	5.1723%
NET EARNINGS RATE:	5.1723%

+ EQUIVALENT 365 DAY RATE IS +  
 + 5.2442% +

## STATEMENT OF ACCOUNT

**PTIF****PUBLIC TREASURERS' INVESTMENT FUND**

Edward T. Alter, Utah State Treasurer, Fund Manager

E315 State Capitol Complex

Salt Lake City, Utah 84114-2315

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ESCROW-LOGAN CITY LANDFILL  
 ATTN: ROBERT BURTON  
 PO BOX 527  
 LOGAN UT 84321

09/30/06

STATEMENT OF ACCOUNT NO: 0871

REPORT PERIOD: 09/01/06 TO 09/30/06

DATE	REFERENCE	DEPOSITS	WITHDRAWALS	BALANCE
09/01/06	BEGBAL	0.00	0.00	1,456,905.39
09/30/06	NETEARN	6,292.31	0.00	1,463,197.70
09/30/06	ENDBAL	0.00	0.00	1,463,197.70

## ACCOUNT SUMMARY

BEGINNING BALANCE:	1,456,905.39
DEPOSITS IN THE PERIOD:	6,292.31
WITHDRAWALS IN THE PERIOD:	0.00
ENDING BALANCE:	1,463,197.70
GROSS EARNINGS:	6,292.31
ADMINISTRATIVE FEE (0.0000%)	0.00
NET EARNINGS:	6,292.31
AVERAGE DAILY BALANCE:	1,456,905.39
GROSS EARNINGS RATE:	5.1827%
NET EARNINGS RATE:	5.1827%

+ EQUIVALENT 365 DAY RATE IS +  
 + 5.2547% +

## STATEMENT OF ACCOUNT

**PTIF****PUBLIC TREASURERS' INVESTMENT FUND**

Edward T. Alter, Utah State Treasurer, Fund Manager  
 E315 State Capitol Complex  
 Salt Lake City, Utah 84114-2315  
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ESCROW-LOGAN CITY LANDFILL  
 ATTN: ROBERT BURTON  
 PO BOX 527  
 LOGAN UT 84321

10/31/06

STATEMENT OF ACCOUNT NO: 0871

REPORT PERIOD: 10/01/06 TO 10/31/06

DATE	REFERENCE	DEPOSITS	WITHDRAWALS	BALANCE
10/01/06	BGBAL	0.00	0.00	1,463,197.70
10/31/06	NETEARN	6,560.92	0.00	1,469,758.62
10/31/06	ENDBAL	0.00	0.00	1,469,758.62

## ACCOUNT SUMMARY

BEGINNING BALANCE:	1,463,197.70
DEPOSITS IN THE PERIOD:	6,560.92
WITHDRAWALS IN THE PERIOD:	0.00
ENDING BALANCE:	1,469,758.62
GROSS EARNINGS:	6,560.92
ADMINISTRATIVE FEE (0.0000%)	0.00
NET EARNINGS:	6,560.92
AVERAGE DAILY BALANCE:	1,463,197.70
GROSS EARNINGS RATE:	5.2072%
NET EARNINGS RATE:	5.2072%

+ EQUIVALENT 365 DAY RATE IS +  
 + 5.2795% +

## STATEMENT OF ACCOUNT

**PTIF****PUBLIC TREASURERS' INVESTMENT FUND**

Edward T. Alter, Utah State Treasurer, Fund Manager  
 E315 State Capitol Complex  
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ESCROW-LOGAN CITY LANDFILL  
 ATTN: ROBERT BURTON  
 PO BOX 527  
 LOGAN UT 84321

11/30/06

STATEMENT OF ACCOUNT NO: 0871

REPORT PERIOD: 11/01/06 TO 11/30/06

DATE	REFERENCE	DEPOSITS	WITHDRAWALS	BALANCE
11/01/06	BEGBAL	0.00	0.00	1,469,758.62
11/30/06	NETEARN	6,379.38	0.00	1,476,138.00
11/30/06	ENDBAL	0.00	0.00	1,476,138.00

## ACCOUNT SUMMARY

BEGINNING BALANCE:	1,469,758.62
DEPOSITS IN THE PERIOD:	6,379.38
WITHDRAWALS IN THE PERIOD:	0.00
ENDING BALANCE:	1,476,138.00
GROSS EARNINGS:	6,379.38
ADMINISTRATIVE FEE (0.0000%)	0.00
NET EARNINGS:	6,379.38
AVERAGE DAILY BALANCE:	1,469,758.62
GROSS EARNINGS RATE:	5.2085%
NET EARNINGS RATE:	5.2085%

+ EQUIVALENT 365 DAY RATE IS +  
 + 5.2809% +

## STATEMENT OF ACCOUNT

**PTIF****UTAH PUBLIC TREASURERS' INVESTMENT FUND**

Edward T. Alter, Utah State Treasurer, Fund Manager  
 E315 State Capitol Complex  
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ESCROW-LOGAN CITY LANDFILL  
 ATTN: ROBERT BURTON  
 PO BOX 527  
 LOGAN UT 84321

12/31/06

STATEMENT OF ACCOUNT NO: 0871

REPORT PERIOD: 12/01/06 TO 12/31/06

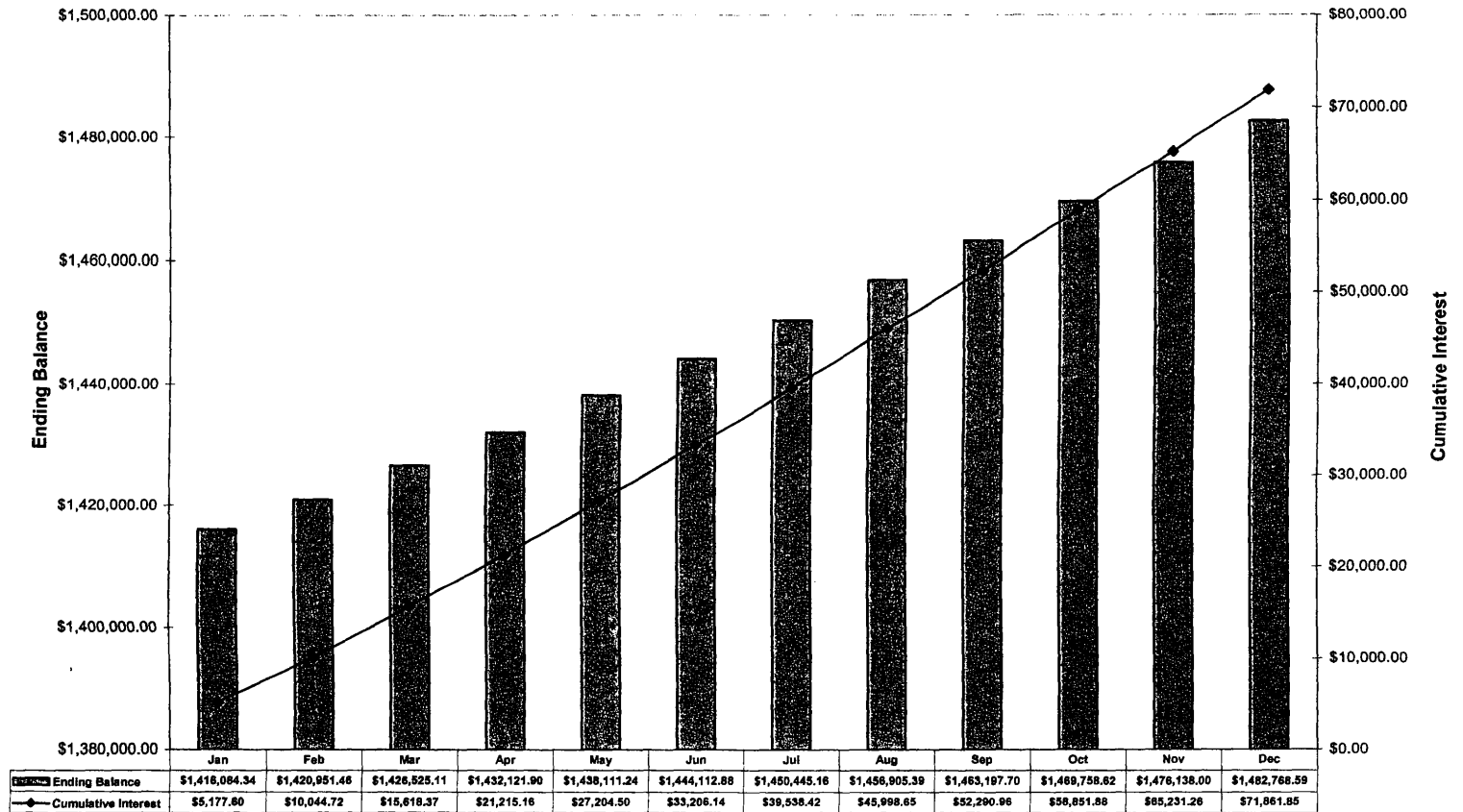
DATE	REFERENCE	DEPOSITS	WITHDRAWALS	BALANCE
12/01/06	BEGBAL	0.00	0.00	1,476,138.00
12/31/06	NETEARN	6,630.59	0.00	1,482,768.59
12/31/06	ENDBAL	0.00	0.00	1,482,768.59

## ACCOUNT SUMMARY

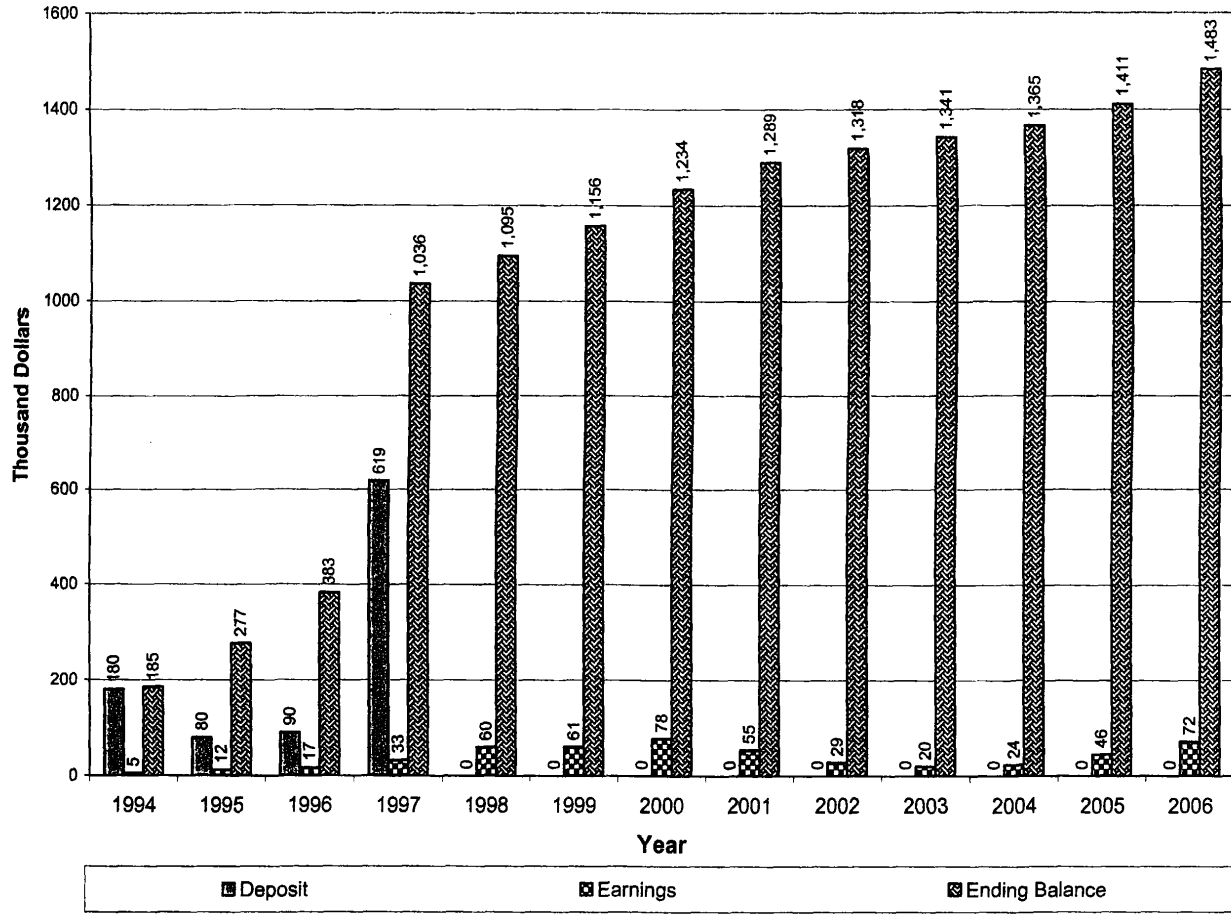
BEGINNING BALANCE:	1,476,138.00
DEPOSITS IN THE PERIOD:	6,630.59
WITHDRAWALS IN THE PERIOD:	0.00
ENDING BALANCE:	1,482,768.59
GROSS EARNINGS:	6,630.59
ADMINISTRATIVE FEE (0.0000%)	0.00
NET EARNINGS:	6,630.59
AVERAGE DAILY BALANCE:	1,476,138.00
GROSS EARNINGS RATE:	5.2163%
NET EARNINGS RATE:	5.2163%

+ EQUIVALENT 365 DAY RATE IS +  
 + 5.2888% +

# Utah Public Treasurer's Investment Fund Account #0871 Monthly Earnings for 2006



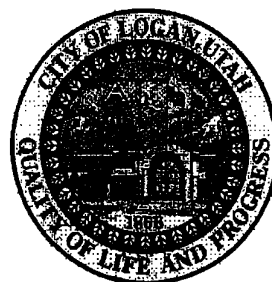
# Financial Assurance Distribution 1994 - 2006



**Ground Water Monitoring  
(Attachment II)**

**ANNUAL  
GROUNDWATER MONITORING REPORT  
FALL 2006  
LOGAN CITY SANITARY LANDFILL  
LOGAN, UTAH**

Prepared for:



February 28, 2007

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**(continued)**

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- 2 Well Coordinates and Groundwater Elevations
- 3 Analytes in Groundwater and Collection System Samples
- 4 Comparison of Detected Analytes in Sample MW-02A and MW-02A Blind Field Duplicate
- 5 Background Statistics for Statistical Comparisons, Detection Analytes 1996-2000 and Assessment Analytes 2001-2003
- 6 Inter-Well Comparisons Of Detected Analytes In Downgradient Wells (Tolerance Limits)

**FIGURES**

- 1 Groundwater Elevations (ft) and Contours
- 2 Arsenic Concentrations
- 3 VOC Concentrations
- 4 Herbicide, Pesticide, PCB, and SVOC Concentrations

**APPENDICES**

- A Field Protocol
- B Groundwater Field Data Sheets and Chain-of-Custody
- C Groundwater Laboratory Report
- D Graphs of Historical Trends for Selected Analytes

# **Explosive Gas Monitoring**

## **(Attachment III)**

Monitoring Location	Date	Time of Day	Wind Speed mph/ Direction	Temp F	Methane LEL	Hydrogen Sulfide PPM	Comments
Monitoring Well #1	3/30/06	9:36 AM	2.4 / S	48	0	0	Locked
	6/29/2006	11:39 AM	0 / N/A	88	0	0	Locked - Good condition
	9/29/06	3:46 PM	0 / N/A	77	0	0	Good Condition
	12/12/06	11:52 AM	0 / N/A	40	0	0	Locked / Flag Needs Repair
Monitoring Well #2A	3/30/06	9:26 AM	3.2 / S-SE	51	0	0	Seal (Concrete) Cracked (Locked)
	6/29/2006	11:35 AM	0 / N/A	84	0	0	Locked - Caulk Cracks
	9/29/06	3:40 PM	0 / N/A	76	0	0	Concrete Cracked
	12/12/06	11:42 AM	0 / N/A	41	0	0	Locked / Needs concrete cap repair and flag put up and anchored
Monitoring Well #3B	3/30/06	1:37 PM	0 / N/A	61	0	0	Locked-Good Condition
	6/29/2006	11:54 AM	0 / N/A	91	0	0	Locked - Good condition
	9/29/06	5:20 PM	0 / N/A	82	0	0	Good Condition
	12/12/06	2:00 PM	2.0 / N	40	0	0	Locked / No Flag
Monitoring Well #4	3/30/06	12:45 PM	0 / N/A	60	0	0	Locked
	6/29/2006	12:43 PM	0 / N/A	88	0	0	Locked - Good condition (except some small animal holes)
	9/29/06	6:21 PM	0 / N/A	79	0	0	Good Condition / Locked
	12/12/06	1:42 PM	1.5 / N	40	0	0	Locked / Good Condition
Monitoring Well #5	3/30/06	12:31 PM	0 / N/A	56	0	0	Locked
	6/29/2006	12:39 PM	0.4-0.8 / NW	90	0	0	Locked - Whole base is loose
	9/29/06	6:16 PM	0 / N/A	79	0	0	Good Condition / Locked
	12/12/06	1:34 PM	3.0 / N	39	0	0	Locked / Good Condition / Flag Missing
Monitoring Well #6A	3/30/06	12:16 PM	0 / N/A	57	0	0	Locked
	6/29/2006	12:34 PM	0.4 / NW	90	0	0	Locked - Good condition
	9/29/06	6:10 PM	0 / N/A	81	0	0	Good Condition / Locked
	12/12/06	1:20 PM	2.4 / N	40	0	0	Locked
New Scale House	3/30/06	2:00 PM	0 / N/A	66	0	0	None
	6/29/2006	11:45 AM	0 / N/A	84	0	0	None
	9/29/06	4:35 PM	0 / N/A	84	0	0	None
	12/12/06	2:08 PM	3.5 / N	43	0	0	None
Old Scale-House	3/30/06	2:35 PM	0 / N/A		0	0	None
	6/29/2006	11:27 AM	0.4 / NE	81	0	0	None
	9/29/06	3:58 PM	0 / N/A	77	0	0	None
	12/12/06	11:25 AM	0 / N/A	42	0	0	None

Monitoring Location	Date	Time of Day	Wind Speed mph/ Direction	Temp F	Methane LEL	Hydrogen Sulfide PPM	Comments
Big Equipment Shed	3/30/06	10:49 AM	0 / N/A	56	0	0	None
	6/29/2006	12:14 PM	0 / N/A	93	0	0	None
	9/29/06	4:43 PM	0 / N/A	81	0	0	None
	12/12/06	12:14 PM	1.0 / NW	42	0	0	None
South East Corner	3/30/06	11:11 AM	0 / N/A	54	0	0	None
	6/29/2006	12:20 PM	0 / N/A	91	0	0	None
	9/29/06	5:52 PM	0 / N/A	81	0	0	None
	12/12/06	12:21 PM	0 / N/A	42	0	0	None
South Boundry	3/30/06	2:52 PM	0 / N/A	60	0	0	None
	6/29/2006	12:26 PM	0 / N/A	90	0	0	None
	9/29/06	6:02 PM	0 / N/A	81	0	0	None
	12/12/06	12:49 PM	0.7 / NW	40	0	0	Bridge passed 3 man test.
Scale House Green Waste	3/30/06	9:57 AM	0 / N/A	63	0	0	Temperature was measured inside building.
	6/29/2006	12:10 PM	0 / N/A	93	0	0	None
	9/29/06	5:00 PM	0 / N/A	84	0	0	None
	12/12/06	12:09 PM	0 / N/A	42	0	0	None
North West Stream	3/30/06	12:48 PM	0 / N/A	61	0	0	We checked both sides
	6/29/2006	12:47 PM	0 / NA	90	0	0	None
	9/29/06	6:34 PM	0 / N/A	77	0	0	None
	12/12/06	1:46 PM	2.4 / N	40	0	0	None
North East Corner	3/30/06	1:51 PM	0 / N/A	61	0	0	None
	6/29/2006	12:01 PM	0 / N/A	99	0	0	None
	9/29/06	6:45 PM	0 / N/A	74	0	0	None
	12/12/06	2:16 PM	2.4 / N	39	0	0	None
South West Stream	3/30/06	12:17 PM	0 / N/A	57	0	0	None
		12:30 PM	0.4 / NW	90	0	0	None
	9/29/06	6:07 PM	0 / N/A	81	0	0	None
	12/12/06	1:17 PM	3.0 / no entry	39	0	0	None
Monitoring Well #9	3/30/06	11:35 AM	0.3 / SW	49	0	0	Locked
	6/29/2006	12:23 PM	2.0 / NW	91	0	0	gust out of NW
	9/29/06	5:58 PM	0 / N/A	81	0	0	Concrete Good / Locked
	12/12/06	12:50 PM	1.7 / N	39	0	0	Locked / No Flag on Pole

Monitoring Location	Date	Time of Day	Wind Speed mph/ Direction	Temp F	Methane LEL	Hydrogen Sulfide PPM	Comments
Monitoring Well#10	3/30/06	10:41 AM	0 / N/A	51	0	0	Locked
	6/29/2006	12:16 PM	0 / N/A	93	0	0	Locked - Good condition
	9/29/06	5:05 PM	0 / N/A	84	0	0	None
	12/12/06	12:17 PM	0 / N/A	40	0	0	Locked / Flag Needs Repair
HHW Sheds	3/30/06	2:16 PM	0 / N/A	63	0	0	None
	6/29/2006	11:27 AM	0.4 / NE	81	0	0	None
	9/29/06	5:14 PM	0 / N/A	82	0	0	None
	12/12/06	11:36 AM	0 / NA	40	0	0	None
Leachate Manhole Cover #1 (This manhole lies the furthest to the East)	3/30/06	11:16 AM	0 / N/A	53	0	0	Looks Good
	6/29/2006	4:52 PM	0 / N/A	97	0	0	looks in - good cond.
	9/29/06	4:00 PM	0 / N/A	79	0	0	Good Condition
	12/12/06	12:31 PM	0.3 / NW	43	0	0	None
Leachate Manhole Cover #2	3/30/06	11:23 AM	0 / N/A	50	0	0	Looks Good
	6/29/2006	4:56 PM	0 / N/A	99	0	0	good cond.
	9/29/06	4:11 PM	0 / N/A	80	0	0	Good Condition
	12/12/06	12:37 PM	0 / NA	43	0	0	None
Leachate Manhole Cover #3	3/30/06	11:27 AM	0 / N/A	50	0	0	Looks Good
	6/29/2006	3:01 PM	0 / N/A	99	0	0	good cond.
	9/29/06	4:15 PM	0 / N/A	86	0	0	Good Condition
	12/12/06	12:41 PM	0 / N/A	42	0	0	None
Leachate Manhole Cover #4	3/30/06	11:41 AM	0 / N/A	54	0	0	Looks Good
	6/29/2006	5:06 PM	0 / N/A	99	0	0	good cond.
	9/29/06	4:17 PM	0 / N/A	86	0	0	Good Condition
	12/12/06	12:55 PM	0 / N/A	40	0	0	None
Leachate Manhole Cover #5	3/30/06	11:45 AM	0.3 / SW	53	0	0	Looks Good
	6/29/2006	5:11 PM	0 / N/A	99	0	0	good cond.
	9/29/06	4:21 PM	0 / N/A	88	0	0	Good Condition
	12/12/06	12:59 PM	0 / N/A	40	0	0	None
Leachate Manhole Cover #6	3/30/06	11:51 AM	0 / N/A	54	0	0	Looks Good
	6/29/2006	5:16 PM	0 / N/A	99	0	0	good cond.
	9/29/06	4:24 PM	0 / N/A	90	0	0	Good Condition
	12/12/06	1:03 PM	0.7 / N	42	0	0	None

Monitoring Location	Date	Time of Day	Wind Speed mph/ Direction	Temp F	Methane LEL	Hydrogen Sulfide PPM	Comments
<b>Leachate Manhole Cover #7</b>	3/30/06	11:56 AM	0 / N/A	52	30	0	Looks Good - O2 level went down to 20.5 from 20.9
	6/29/2006	5:21 PM	0 / N/A	99	0	0	good cond.
	9/29/06	4:26 PM	0 / N/A	91	0	0	Good Condition
	12/12/06	1:05 PM	0 / N/A	40	0	0	None
<b>Leachate Manhole Cover #8</b>	3/30/06	12:05 PM	0 / N/A	54	0	0	Looks Good
	6/29/2006	5:27 PM	0 / N/A	99	0	0	good cond.
	9/29/06	4:29 PM	0 / N/A	91	0	0	Good Condition
	12/12/06	1:07 PM	0.7 / N	41	0	0	None
<b>Leachate Manhole Cover #9</b>	3/30/06	12:11 PM	0 / N/A	54	0	0	Looks Good
	6/29/2006	5:33 PM	0.3 / S	103	0	0	good cond.
	9/29/06	4:32 PM	0 / N/A	91	0	0	Good Condition
	12/12/06	1:11 PM	0.7 / N	40	0	0	None
<b>Leachate Manhole Cover (Nearest Pump)</b>	3/30/06						None
	6/29/2006						None
	9/29/06						Unable to enter Gate.
	12/12/06	1:26 PM	3.0 / N	40	0	0	Manhole Cover was off.
<b>Leachate Manhole Cover (Furthest one located to the South on 1900 W)</b>	3/30/06	12:22 PM	0 / N/A	54	0	0	Manhole East of Leachate Ponds.
	6/29/2006	1:00 PM	3.6 / NW	90	0	0	None
	9/29/06						Not found.
	12/12/06	1:31 PM	2.0 / N	40	0	0	None
<b>Leachate Manhole Cover (Furthest one located to the North on 1900 W)</b>	3/30/06	12:39 PM	0 / N/A	56	0	0	Water leaking out of the top of this manhole.
	6/29/2006	12:51 PM	0 / N/A	90	0	0	No water leaking out
	9/29/06						Not found.
	12/12/06	1:38 PM	3.0 / N	40	0	0	None
<b>Shed in Greenwaste</b>	3/30/06	10:24 AM	0 / N/A	53	0	0	None
	6/29/2006	5:49 PM	1.4 / S	99	0	0	None
	9/29/06	4:50 PM	0 / N/A	84	0	0	None
	12/12/06	12:27 PM	0 / N/A	42	0	0	None
<b>Little Cat Shack</b>	3/30/06						Not Checked
	6/29/2006						Not Checked
	9/29/06						Not Checked
	12/12/06	12:02 PM	0.7 / SW	40	0	0	None

**Training Report**  
**(Attachment IV)**

Training	Management		Equipment Operators							Scale House Attendants					Techns. / Inspectors		
	Bradford, Bill	Christensen, John	Bell, Garry	Birch, Eric	Blanchard, Todd	Hullinger, Warren	Leishman, Mel	Rigby, Randy	Wright, Blaine	Bodrero, Rachelle	McKee, Susan	Thomson, Tausha	Vorwaller, Casey	Whitney, Josh	Barnes, Dan	Douglas, Tony	Martineau, Charles
Customer Service	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X
Accident Investigation / Drug & Alcohol Policy	X	X	X	X	X	X	X		X			X			X	X	X
Mandatory HR Training	X	X	X	X	X	X	X	X	X		X	X			X	X	X
Lockout Tagout/ Confined Space	X	X	X	X	X	X	X	X	X		X				X	X	X
Blood Born Pathogens / Haz. Communication		X	X	X	X	X	X	X		X	X	X		X	X	X	X
Defensive Driving	X	X		X	X	X		X	X			X			X	X	X
1st Aid & CPR Review	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X
SPCC Training / Hazardous Waste	X	X		X	X	X	X			X	X	X		X	X	X	X
CDL	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X
Department Meeting	X	X		X	X	X		X	X		X				X		X
Department Meeting	X	X	X	X	X	X	X	X	X	X		X			X	X	X
Department Meeting	X	X	X			X	X	X	X						X		X
Department Meeting	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X
Department Meeting	X	X	X	X	X	X			X	X	X	X				X	X
Department Meeting	X	X	X	X		X	X		X	X			X		X	X	
Department Meeting	X		X	X	X	X			X			X		X	X	X	
Department Meeting	X	X	X		X	X	X	X							X	X	
SWANA MOLO	X																
SWANA Utah Chapter 2-Day Training				X			X	X		X		X					
. 40 hr Hazwopper Refresher (8 hr)																X	X
Visual Opacity Training / Certification	X	X															

**Tonnage Report**  
**(Appendix A)**

## Class I Landfill Tonnage Report (values expressed in tons)

*From January 1, 2006 to December 31, 2006*

Class I Waste	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Animal Bi-Products	452.0	477.5	474.7	424.3	382.3	381.3	307.1	348.5	387.6	367.8	419.4	394.1	4,816.5
Asbestos	1.3	0.0	0.0	0.0	3.3	0.0	0.0	1.4	9.1	0.0	0.0	0.0	15.1
Commercial Waste	4,399.4	3,860.9	4,603.3	4,498.9	4,973.7	4,682.8	4,486.2	5,699.0	4,843.0	4,898.8	4,974.5	3,921.6	55,842.0
Community Cleanup	0.0	0.0	0.0	9.1	42.2	0.3	0.0	0.3	3.4	9.9	0.0	0.0	65.2
Household Waste	2,079.1	1,732.0	2,344.5	2,598.6	3,428.4	3,186.3	2,489.8	2,353.6	2,003.3	2,019.3	2,145.1	1,961.8	28,341.7
Infectious Waste	0.4	0.6	0.6	0.7	0.5	1.1	0.7	0.8	0.8	0.6	0.6	0.7	7.9
Spring Cleanup	5.1	0.0	3.7	351.5	11.6	6.0	3.8	9.8	0.3	5.0	0.0	0.0	396.8
<b>Total</b>	<b>6,937.3</b>	<b>6,070.9</b>	<b>7,426.8</b>	<b>7,883.0</b>	<b>8,842.1</b>	<b>8,257.7</b>	<b>7,287.6</b>	<b>8,413.4</b>	<b>7,247.4</b>	<b>7,301.2</b>	<b>7,539.5</b>	<b>6,278.2</b>	<b>89,485.1</b>

## Class IVb Landfill Tonnage Report (values expressed in tons)

*From January 1, 2006 to December 31, 2006*

Class IVb Waste	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
C&D	734.1	1,291.2	910.1	1,563.5	2,921.1	1,948.5	1,295.3	1,806.1	2,640.4	1,956.9	1,629.0	1,681.0	20,377.0
Concrete	314.2	320.5	237.5	91.1	993.5	848.1	242.9	765.8	170.9	201.1	154.0	651.4	4,991.0
Stumps & Root Balls	9.0	5.7	1.8	20.6	22.7	2.7	0.0	17.7	0.0	6.5	2.1	7.0	95.7
<b>Total</b>	<b>1,057.3</b>	<b>1,617.4</b>	<b>1,149.3</b>	<b>1,675.2</b>	<b>3,937.3</b>	<b>2,799.3</b>	<b>1,538.2</b>	<b>2,589.6</b>	<b>2,811.3</b>	<b>2,164.5</b>	<b>1,785.1</b>	<b>2,339.3</b>	<b>25,463.7</b>

## Compost Facility Tonnage Report (values expressed in tons)

*From January 1, 2006 to December 31, 2006*

Compostable Waste	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Curbside Green Waste	0.0	2.3	4.3	67.1	150.5	132.1	83.1	135.5	52.1	68.4	43.4	0.0	738.9
Green Waste	173.2	127.0	388.6	1,072.5	1,193.5	929.2	792.2	966.4	683.0	904.1	2,988.8	256.6	10,474.9
Pallets	50.6	71.9	19.6	13.2	28.9	20.1	5.7	13.4	13.0	26.6	10.5	12.8	286.1
Fire Wood	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
<b>Total</b>	<b>223.8</b>	<b>201.2</b>	<b>412.9</b>	<b>1,152.7</b>	<b>1,372.8</b>	<b>1,081.3</b>	<b>881.0</b>	<b>1,115.3</b>	<b>748.1</b>	<b>999.1</b>	<b>3,042.7</b>	<b>269.3</b>	<b>11,500.2</b>

## Cover Material (Customer Provided) Tonnage Report (values expressed in tons)

*From January 1, 2006 to December 31, 2006*

Soils	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Cover Material	1,399.0	5,903.4	7,802.4	9,121.5	11,371.9	2,708.9	870.6	4,780.7	3,723.5	7,204.0	1,631.3	1,393.3	57,910.4
Contaminated Soils	0.0	0.0	0.0	0.0	0.0	3.7	0.0	92.4	0.0	0.0	0.0	0.0	96.1
<b>Total</b>	<b>1,399.0</b>	<b>5,903.4</b>	<b>7,802.4</b>	<b>9,121.5</b>	<b>11,371.9</b>	<b>2,712.6</b>	<b>870.6</b>	<b>4,873.0</b>	<b>3,723.5</b>	<b>7,204.0</b>	<b>1,631.3</b>	<b>1,393.3</b>	<b>58,006.5</b>

## Asphalt Tonnage Report (values expressed in tons)

*From January 1, 2006 to December 31, 2006*

Asphalt Diverted/Reused	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Asphalt	1.7	3.7	12.0	0.0	106.4	561.5	57.2	1,726.6	82.6	172.6	306.5	22.6	3,053.2
<b>Total</b>	<b>1.7</b>	<b>3.7</b>	<b>12.0</b>	<b>0.0</b>	<b>106.4</b>	<b>561.5</b>	<b>57.2</b>	<b>1,726.6</b>	<b>82.6</b>	<b>172.6</b>	<b>306.5</b>	<b>22.6</b>	<b>3,053.2</b>

## Recycling Tonnage Report (values expressed in tons)

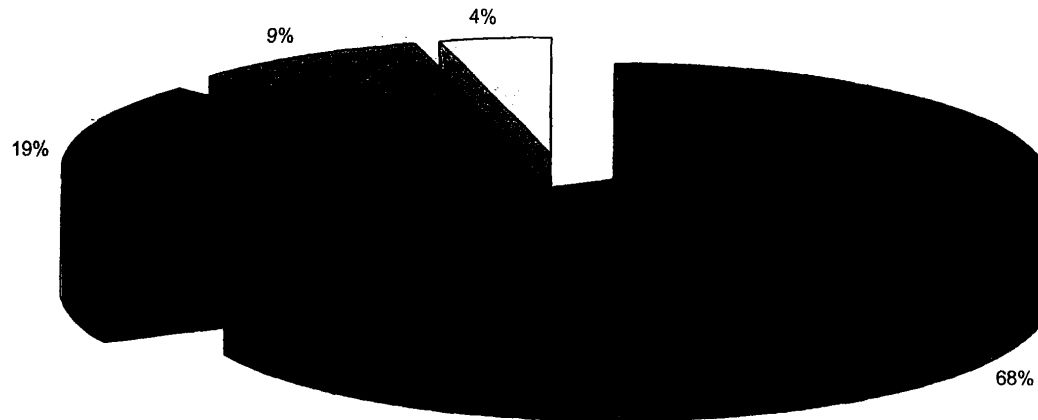
*From January 1, 2006 to December 31, 2006*

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Totals
<b>Cardboard</b>	218.2	171.8	235.6	187.1	203.2	207.4	175.2	202.4	207.5	208.4	206.3	183.4	2406.4
<b>Newspaper/Mixed Paper</b>	97.3	71.2	83.0	93.0	97.5	73.1	62.0	34.3	35.4	45.6	38.2	45.2	775.7
<b>Ferrous Metals</b>	14.4	19.6	38.4	34.8	40.5	48.7	41.7	35.9	35.3	30.8	29.2	22.8	392.0
<b>Milk Jugs</b>	2.8	2.0	2.1	1.9	2.5	1.9	1.2	1.2	1.9	1.1	0.0	1.7	20.3
<b>Pop Bottles</b>	3.8	1.5	1.2	2.5	1.5	2.5	0.9	0.0	0.0	0.6	0.0	0.0	14.4
<b>Aluminum Cans/Scrap</b>	0.6	0.5	2.0	0.9	2.6	0.0	2.0	1.5	1.8	0.7	0.0	0.5	13.0
<b>Office Paper</b>	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1
<b>Carpet Pad</b>	0.0	0.0	0.0	0.0	0.3	1.2	0.3	1.1	15.7	0.0	0.0	0.0	18.5
<b>Magazines</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	1.7
<b>Curbside Recycling</b>	52.0	43.3	54.4	42.2	55.7	49.6	154.2	289.0	274.0	281.0	325.9	361.4	1982.8
<b>Total</b>	389.0	309.8	418.7	362.3	403.6	384.5	437.6	565.4	571.6	568.1	599.5	616.7	5626.8

# Household Hazardous Waste Collected 2006

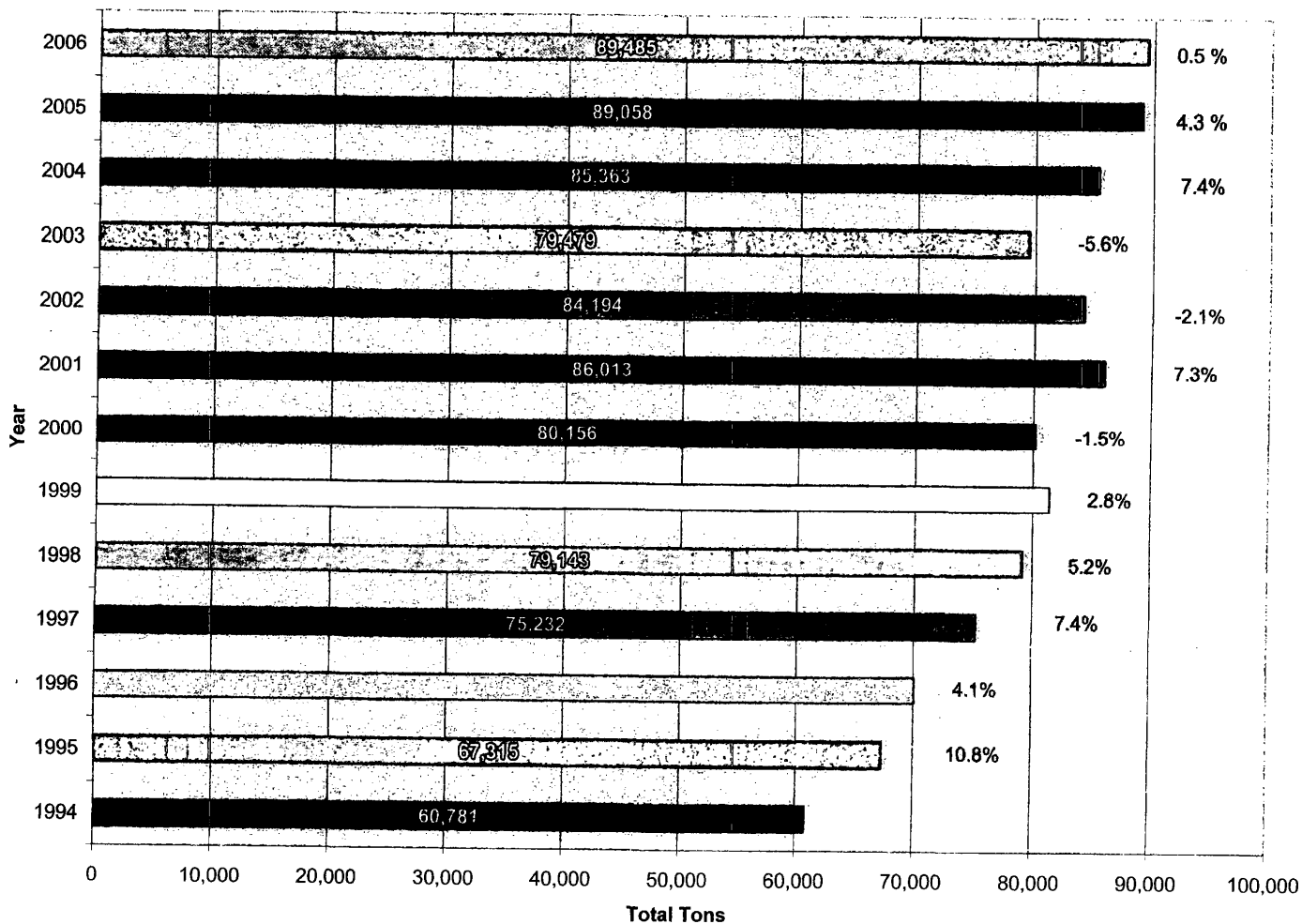
Material Description	Containers	Total Volume of Containers (gallons)	Container Volumes (gallons)
Antifreeze	3	165	55
Antifreeze and Oil Mix	14	770	55
Calcium Hypochlorite Mixtures	1	55	55
Consumer Commodities	25	1,375	55
Corrosive Liquid, Acidic, Inorganic	7	280	10/20/30/55
Corrosive Liquid, Acidic, Organic	2	12	2/10
Corrosive Liquid, Basic, Inorganic	1	55	55
Corrosive Liquid, Basic, Organic	5	210	15/30/55
Dry Batteries	1	55	55
Ethylene Glycol Solution	7	385	55
Flammable Liquids	170	9,325	30/55
Flammable Solids, Organic	1	5	5
Mercury	1	20	20
Non Regulated Material	9	495	55
Oxidizing Liquid	1	55	55
Oxidizing Solid	3	100	15/30/55
Paint	79	4,345	55
Toxic Liquids, Organic	20	1,100	55
Toxic Solids, Organic	7	385	55
Used Oil	10	550	55
<b>Totals:</b>	<b>367</b>	<b>19,742</b>	<b>N/A</b>

**City of Logan  
Environmental Division  
Solid Waste Landfilled and Recycled  
2006**

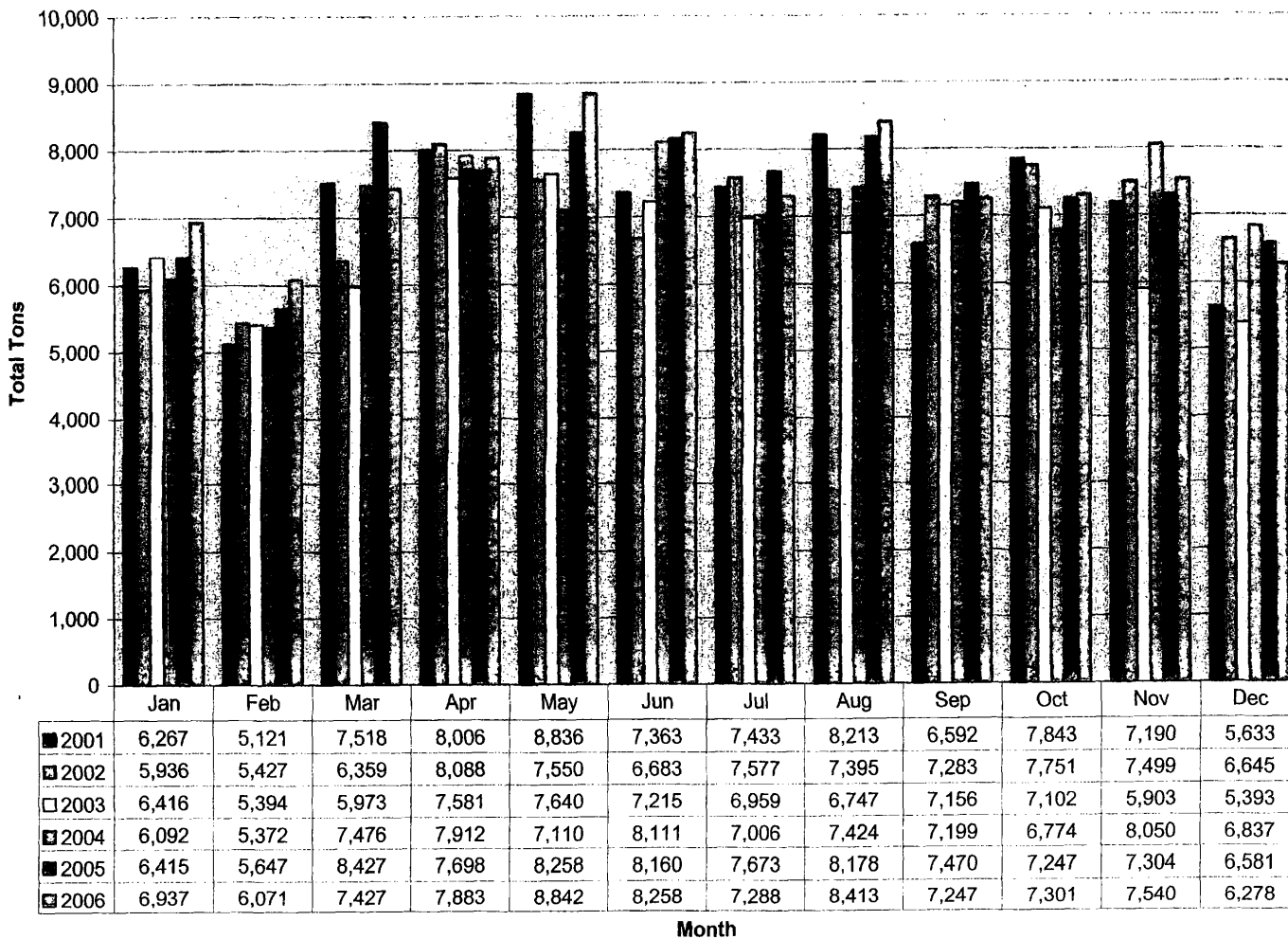


■ Class I Waste	■ Class IVb Waste	■ Compostables	□ Other Recycled
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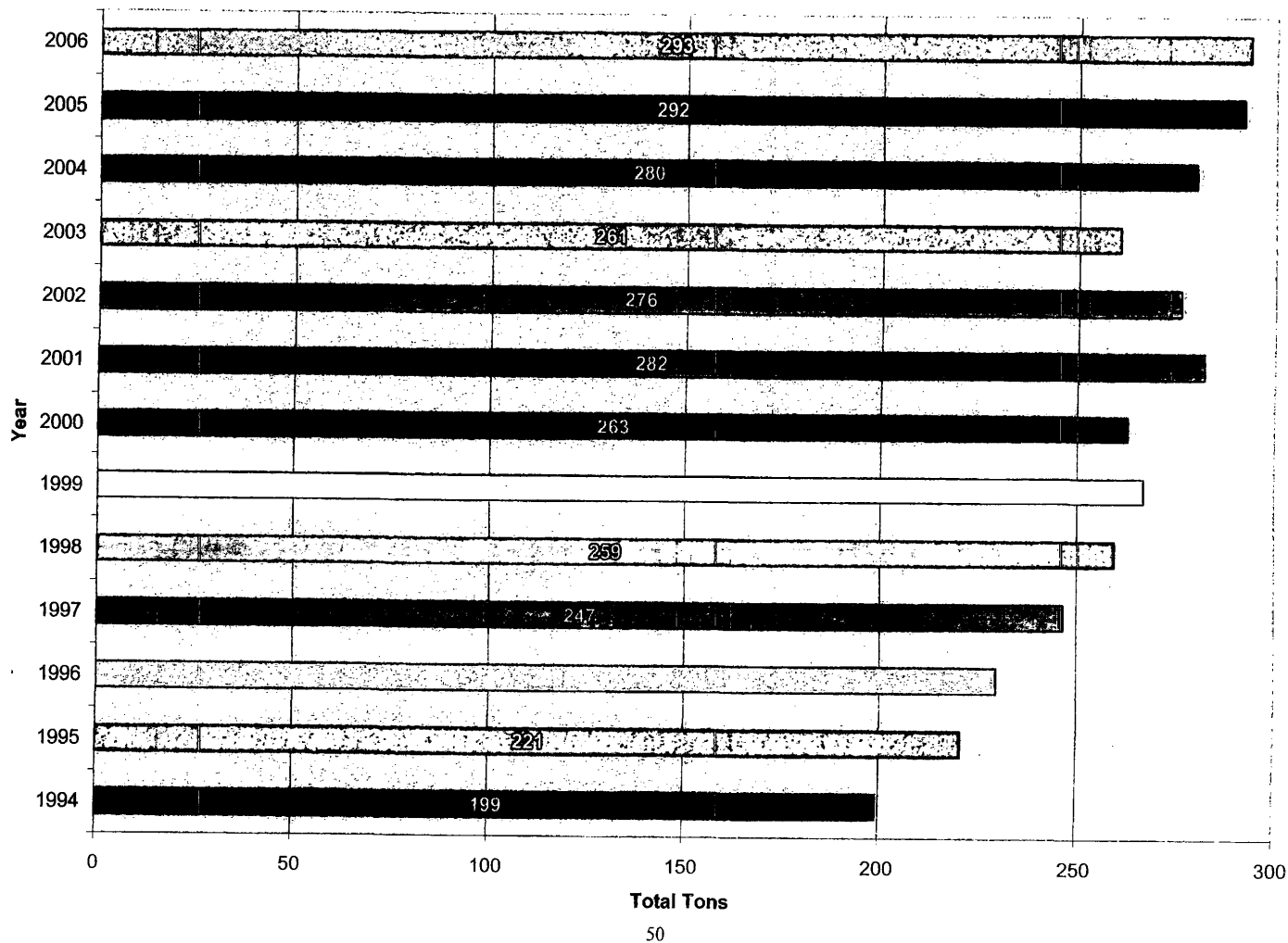
**Class I Solid Waste Landfilled per Year 1994 - 2006 With Noted Percent Increase from Previous Year  
(Includes Asbestos, Animal Bi-Products, Household Waste, Commercial Waste)**



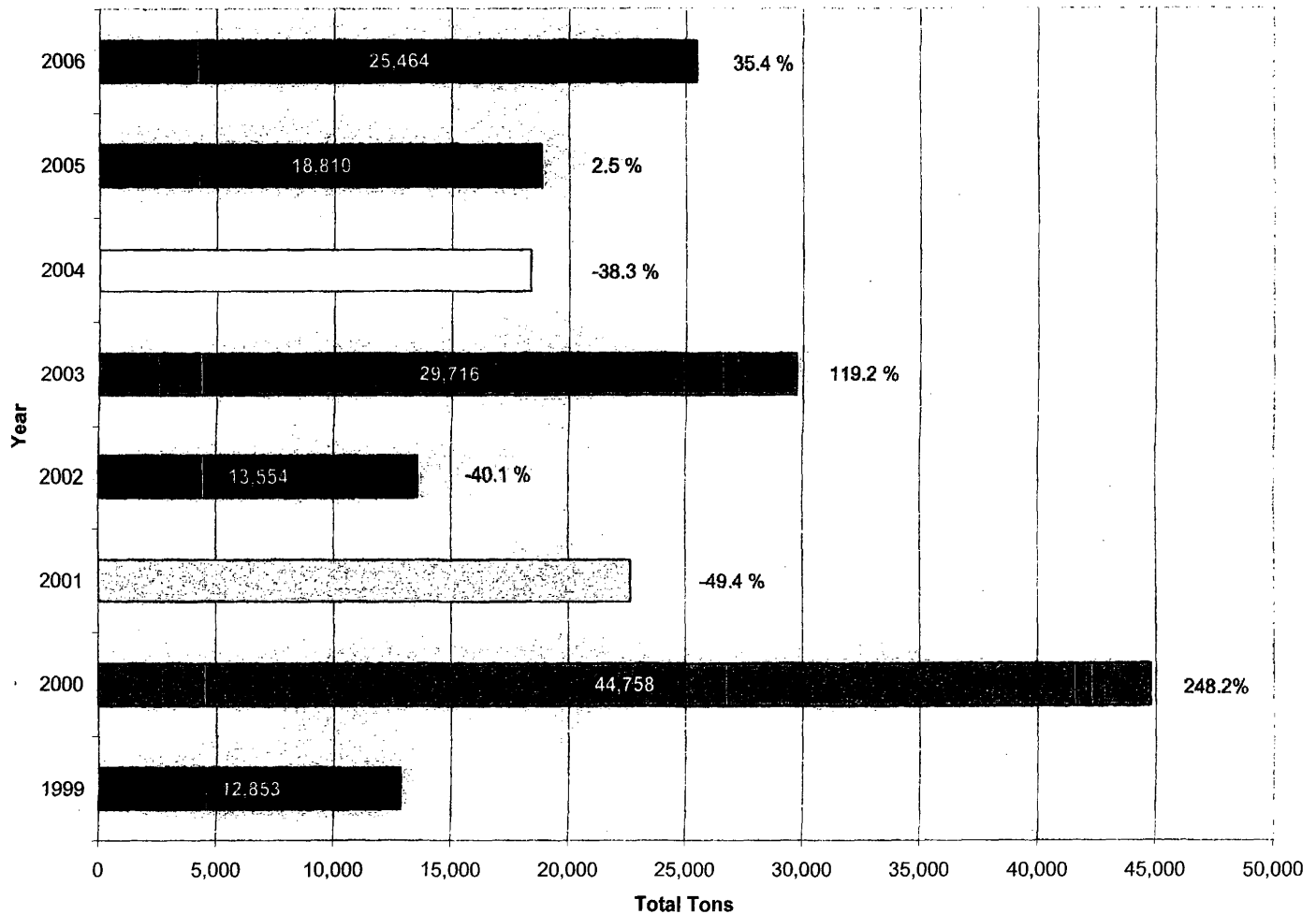
**Class I Solid Waste Landfilled per Month 2001 - 2006**  
(Includes Asbestos, Animal BI-products, Household Waste, and Commercial Waste)



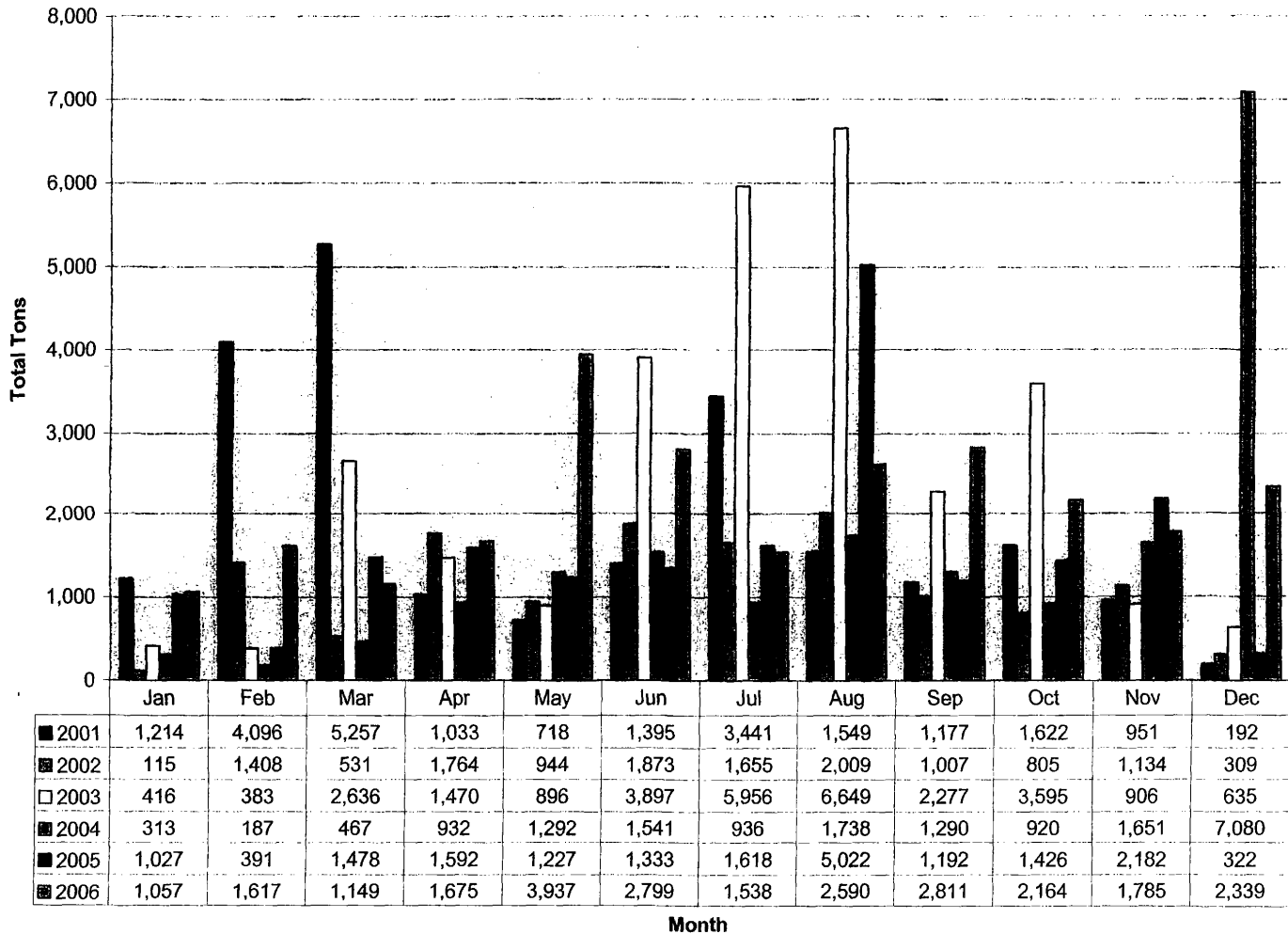
**Class I Solid Waste Landfilled Average Tons per Day (Based on 305 Days of Operation) 1994 - 2006**  
**(Includes Asbestos, Animal BI-Products, Household Waste, Commercial Waste)**



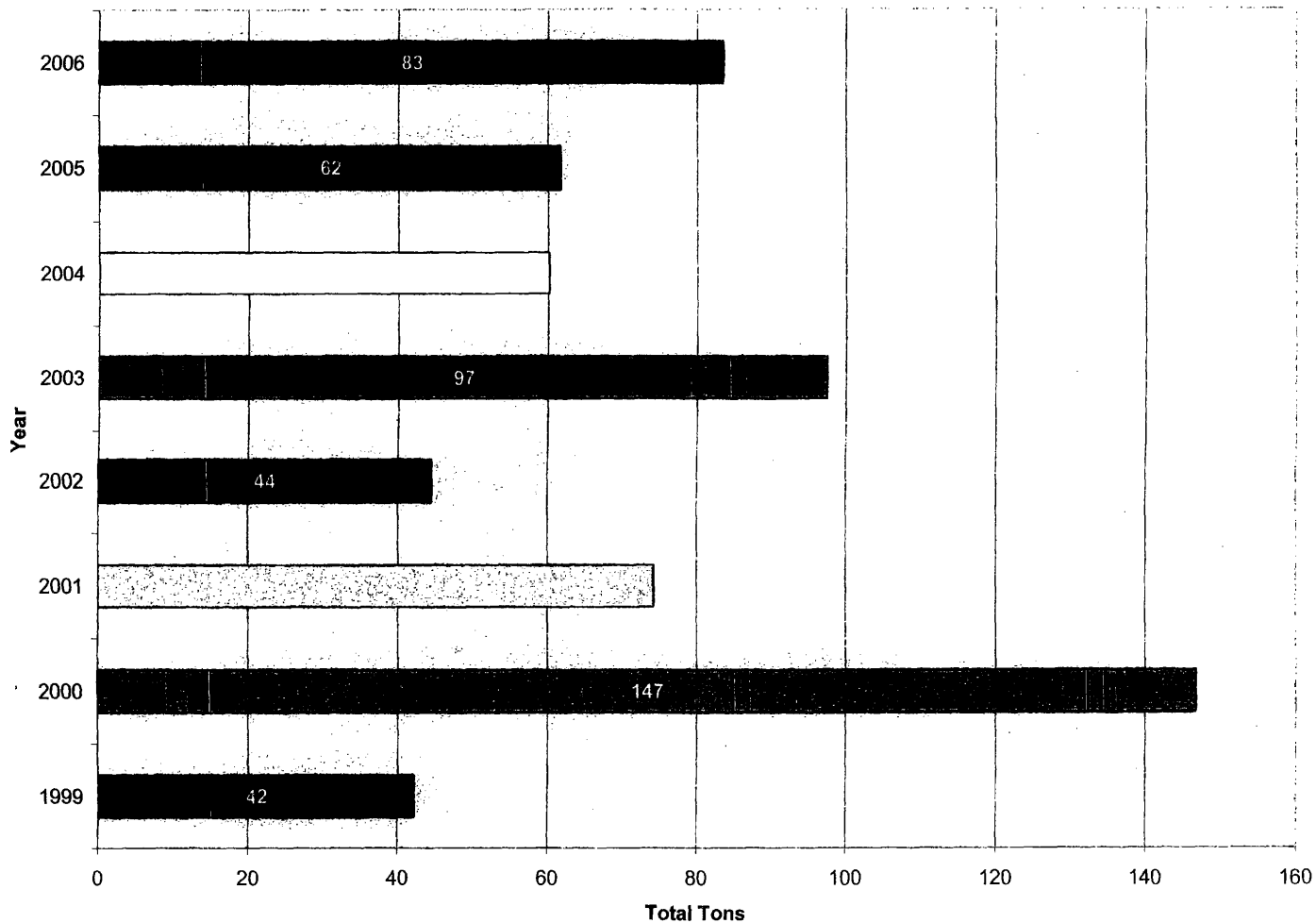
**Class IVb Solid Waste Landfilled per Year 1999 - 2006 With Noted Percent Increase from Previous Year  
(Includes Concrete, Construction Debris, Stumps & Rootballs)**



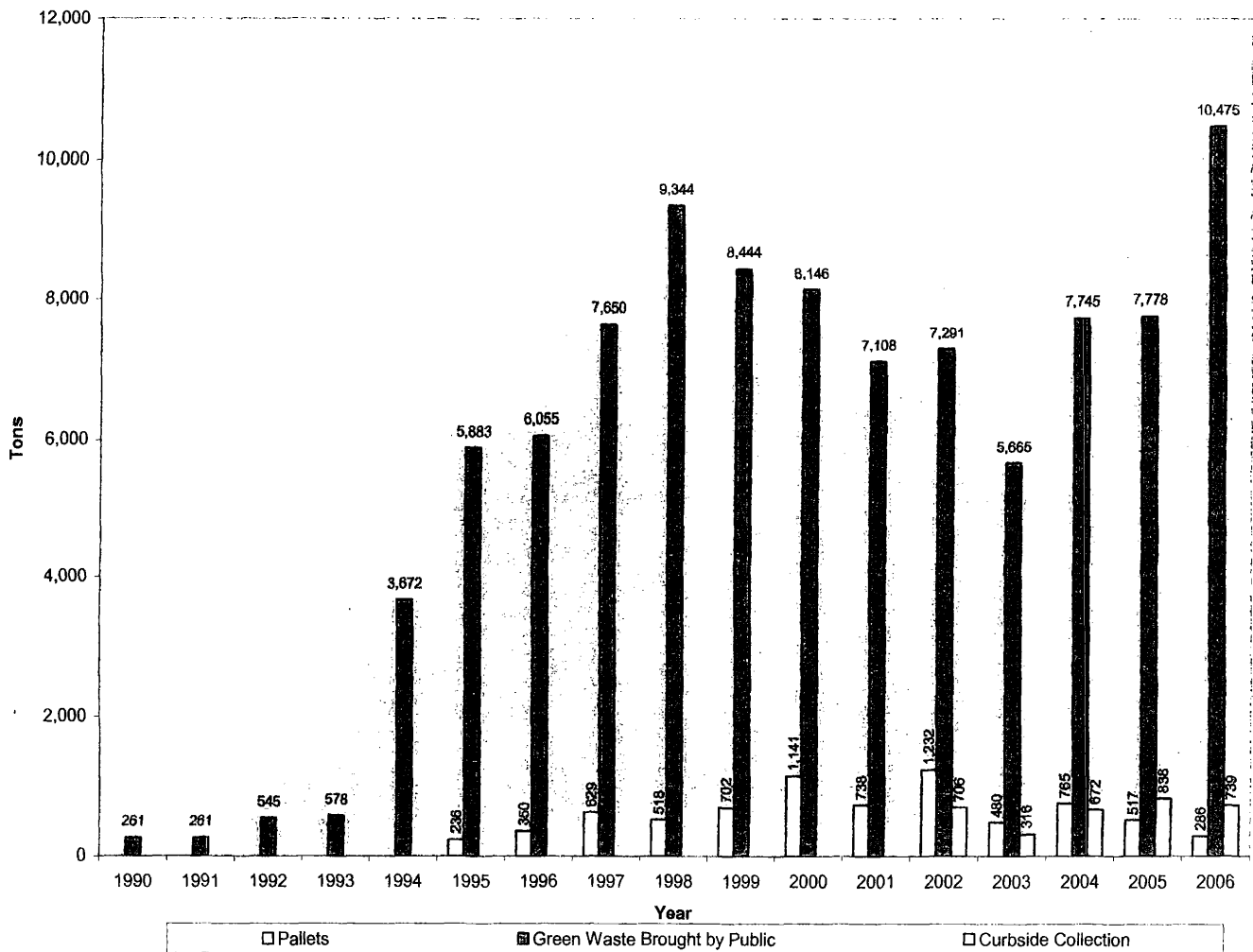
**Class IVb Solid Waste Landfilled per Month 2001 - 2006**  
**(Includes Concrete, Construction Debris, Stumps & Rootballs)**



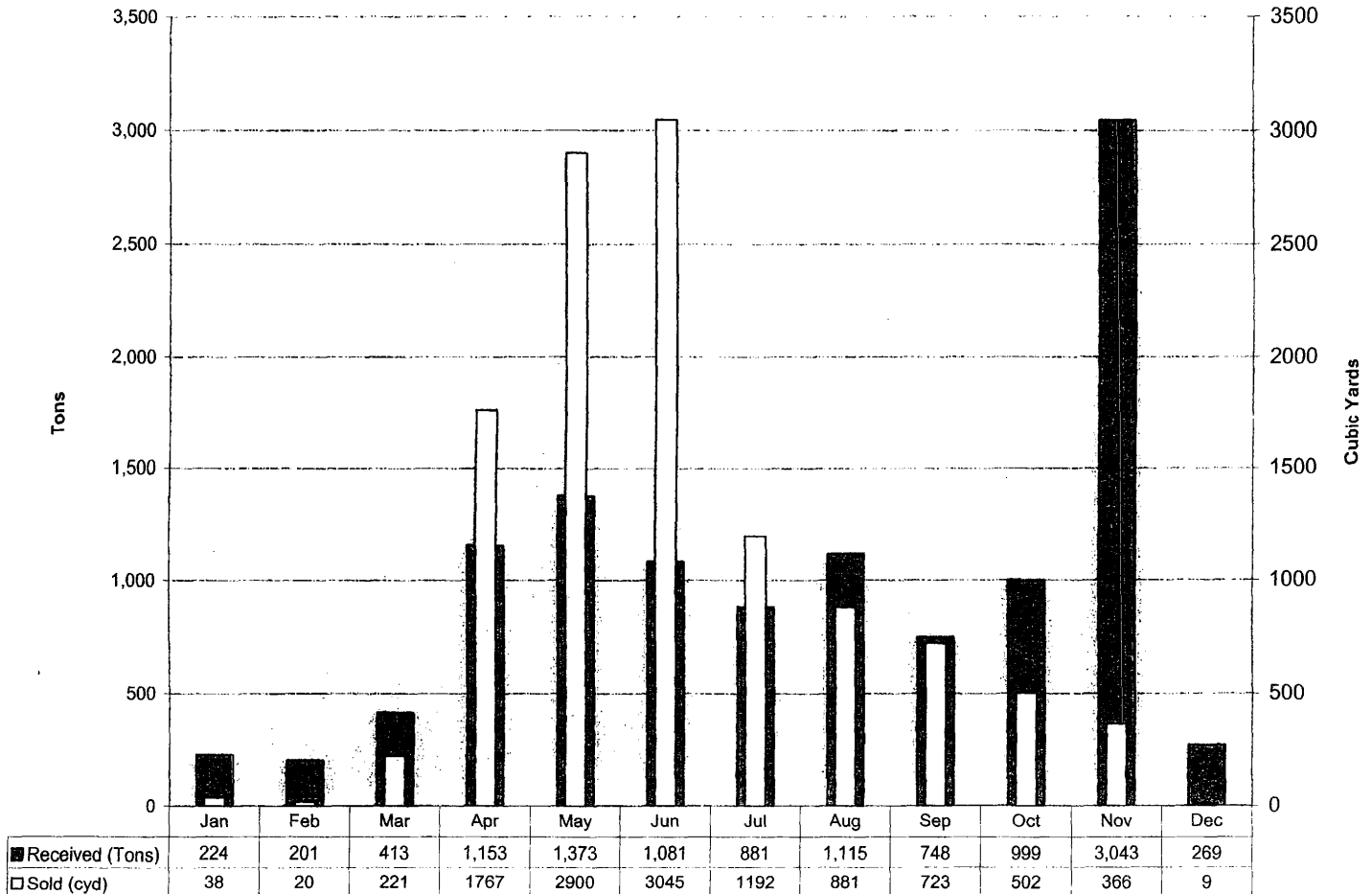
**Class IVb Solid Waste Landfilled Average Tons per Day (Based on 305 Days of Operation) 1999 - 2006**  
**(Includes Concrete, Construction Debris, Stumps & Rootballs)**



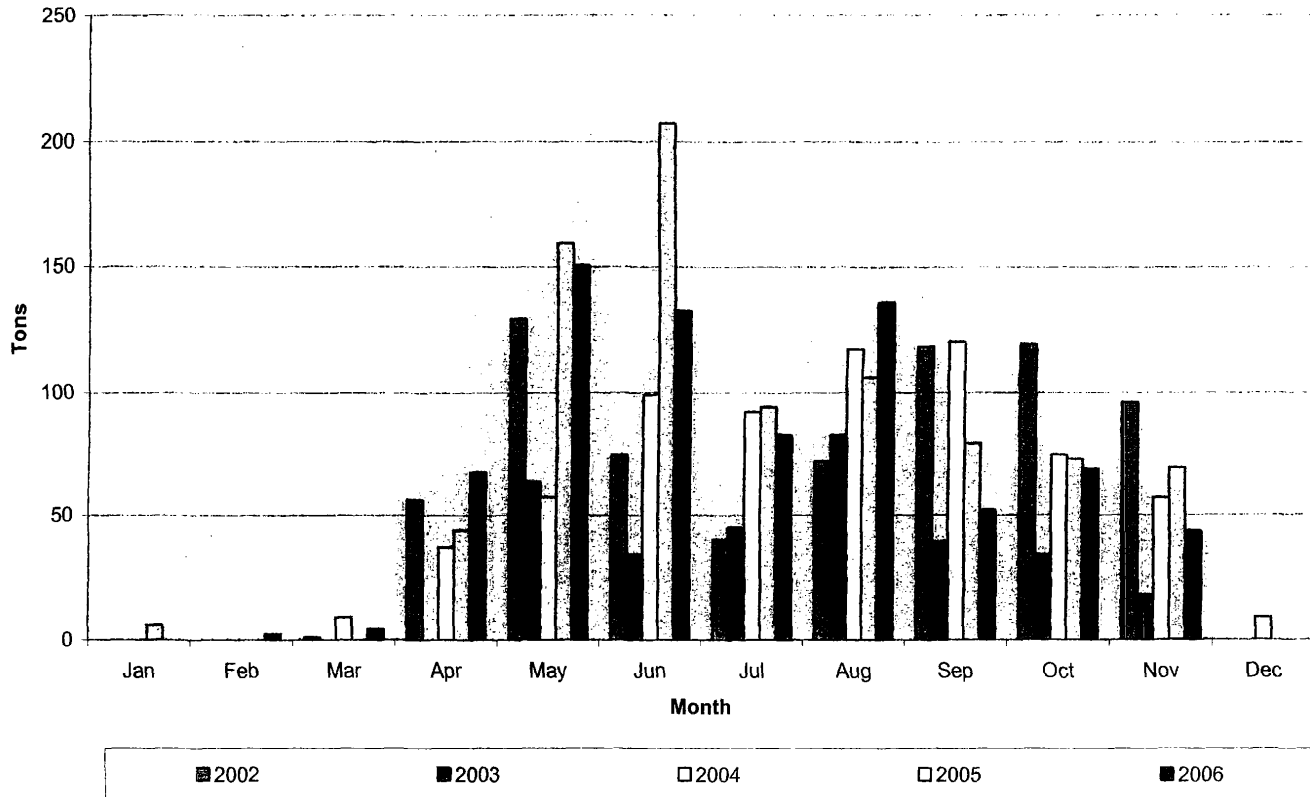
**Compostables Received 1990 - 2006**  
**(Includes Pallets, Green Waste Brought by Public and Curbside Collection Program)**



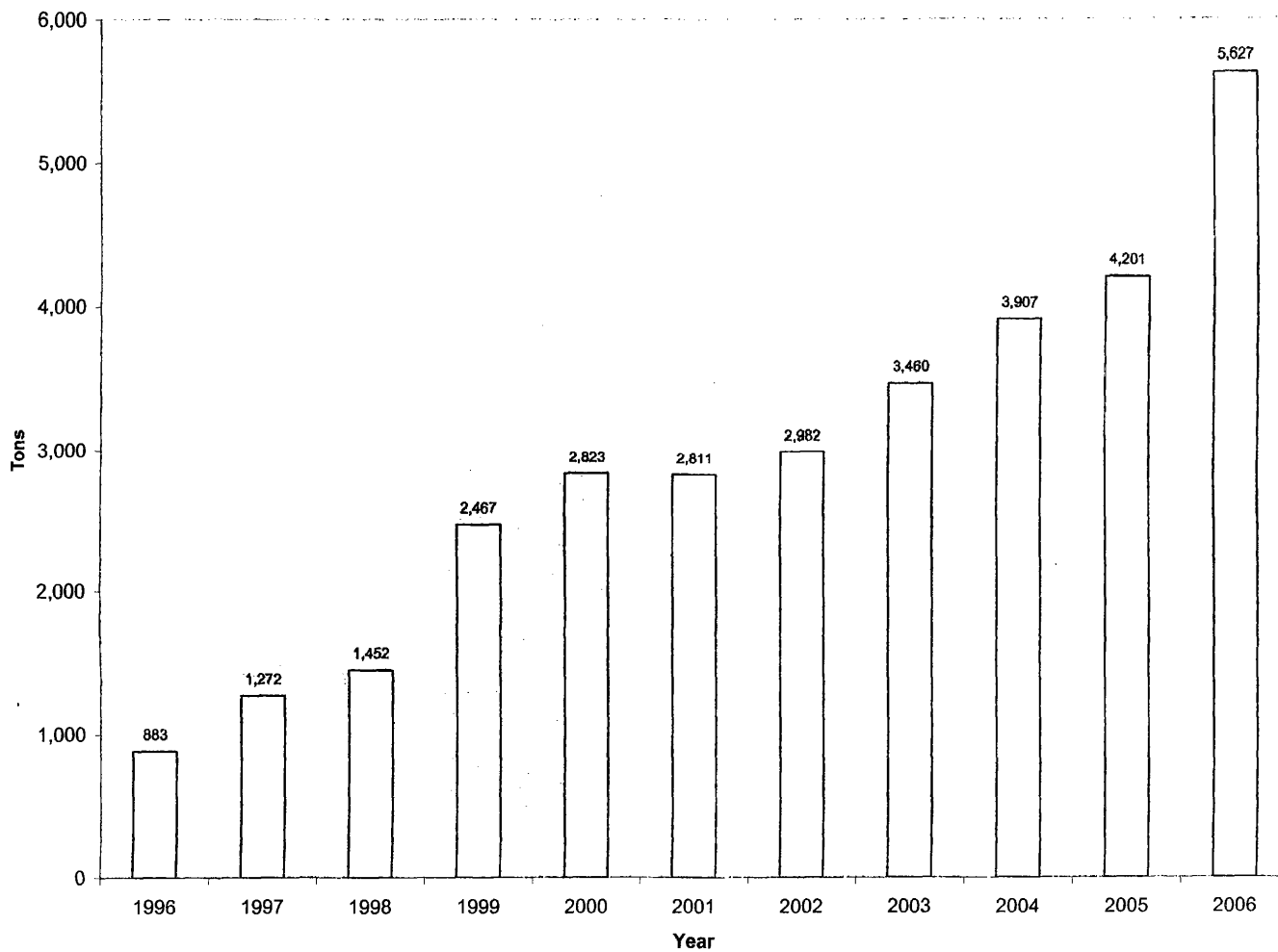
# Compostables Received and Sold by Month 2006



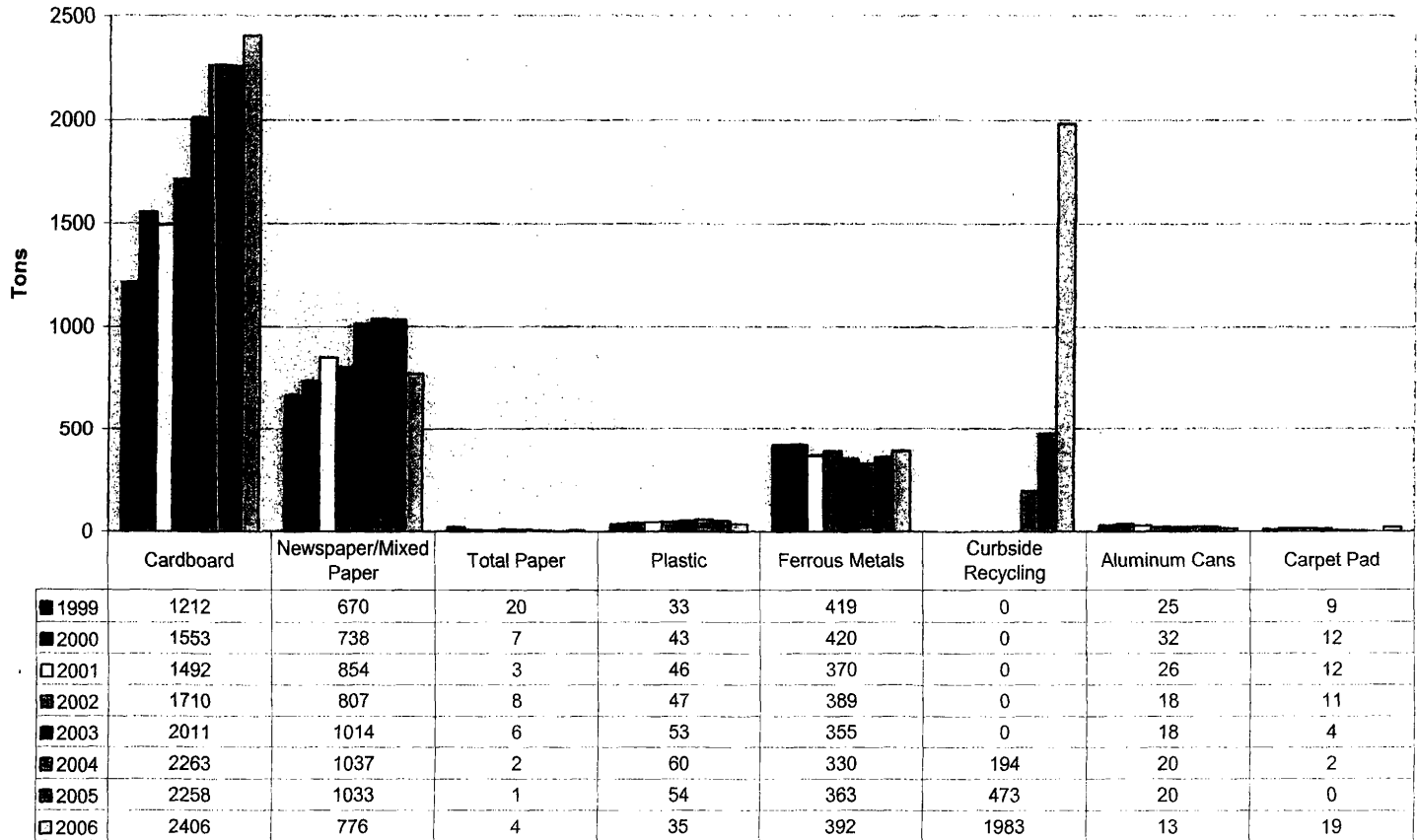
**Curbside Green Waste by Month 2002 - 2006**



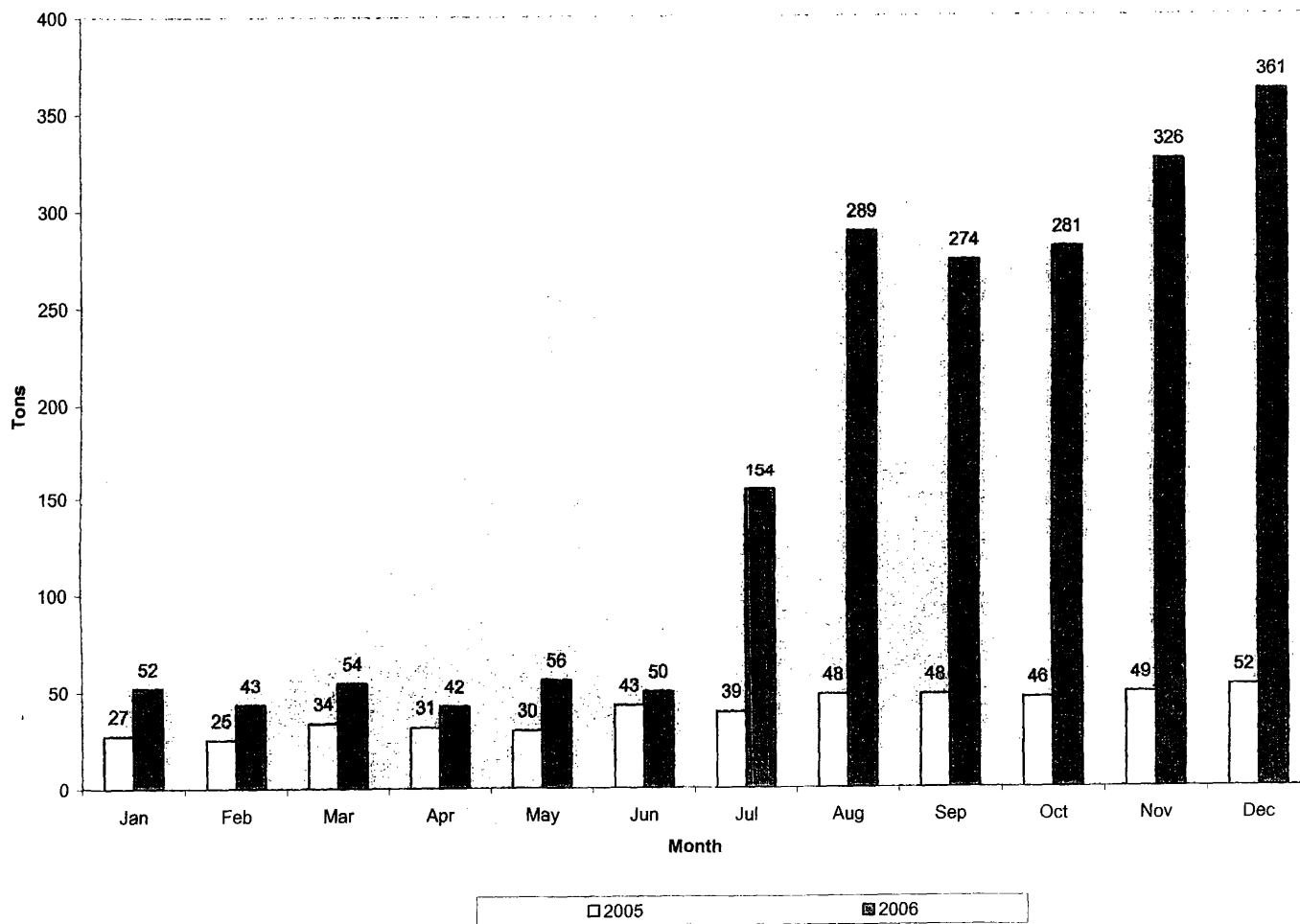
**Recyclables 1996 - 2006**  
**(Cardboard, Mixed Papers, Metals, Plastics, Carpet Pad)**



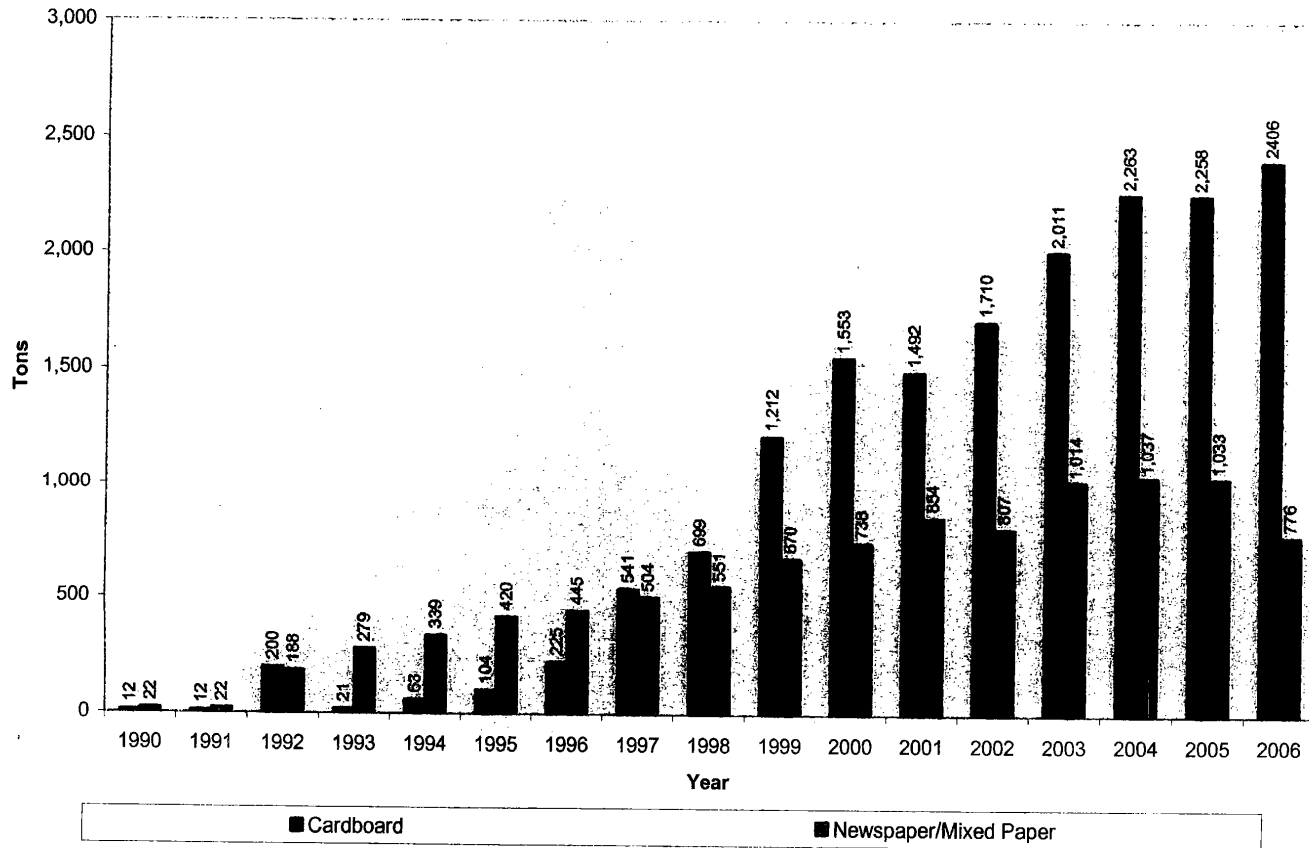
# Recycled Commodities 1999 - 2006



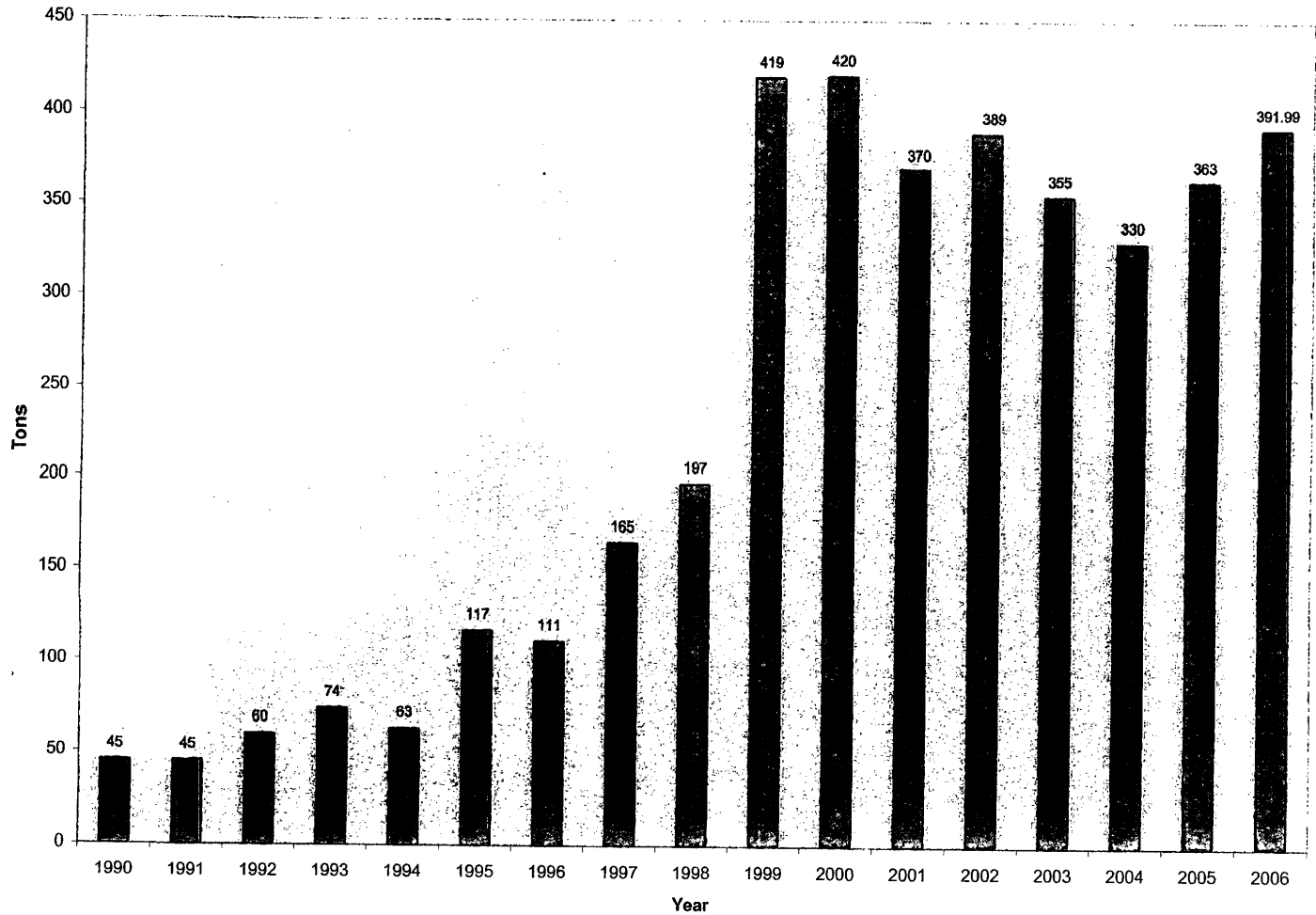
# Curbside Recycling 2005 - 2006



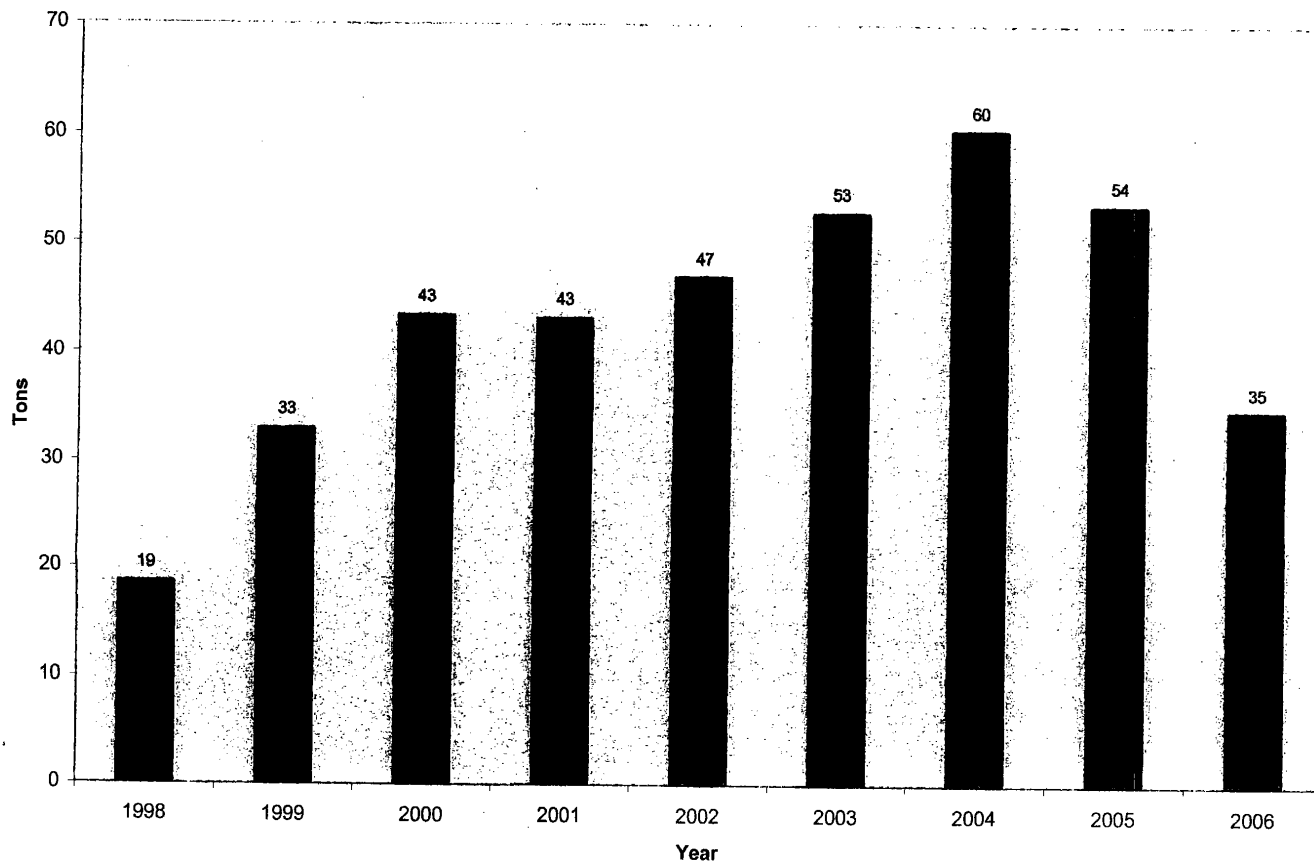
# Cardboard and Newspaper 1990 - 2006



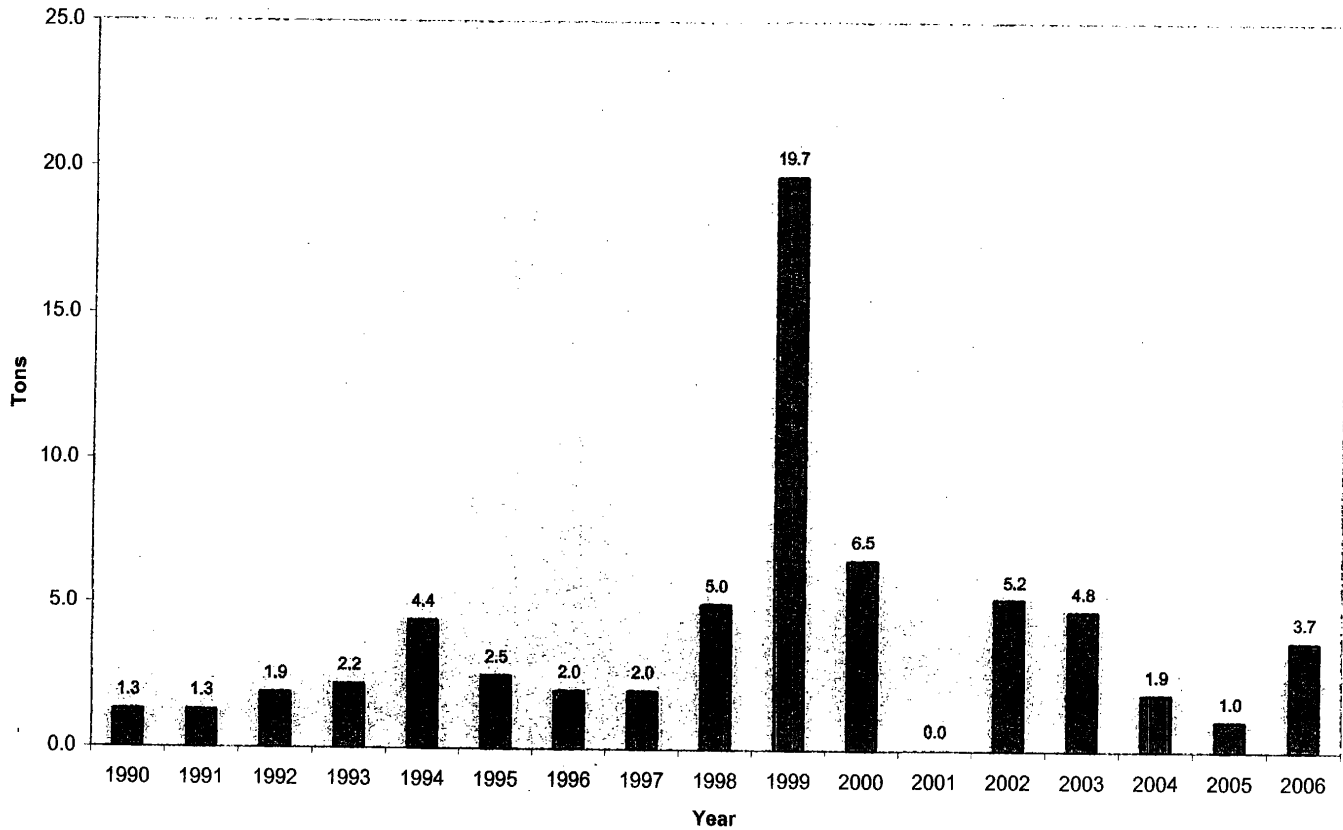
# Ferrous Metals 1990 - 2006



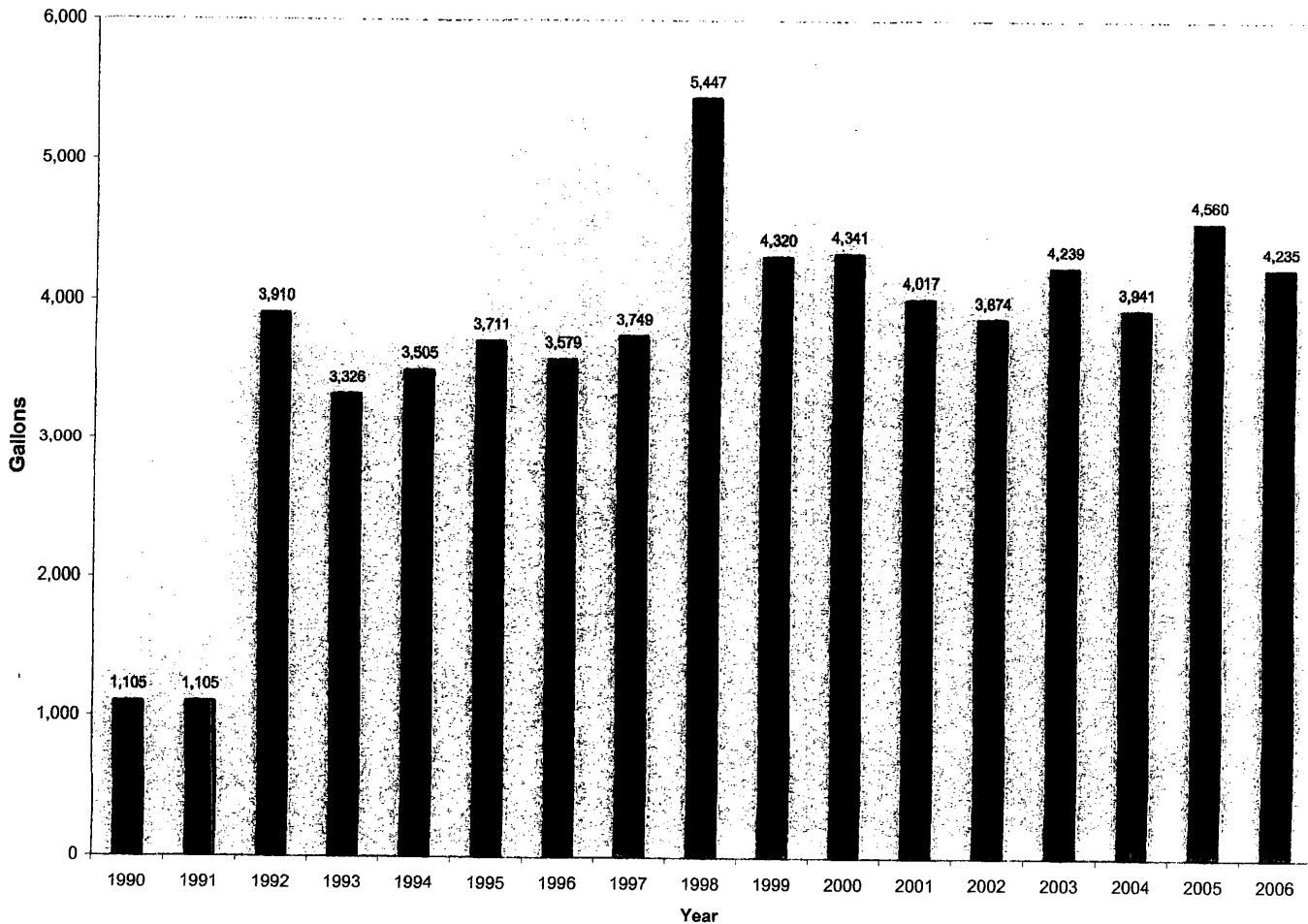
**Plastic 1998 - 2006**  
**(Pop Bottles and Milk Jugs)**



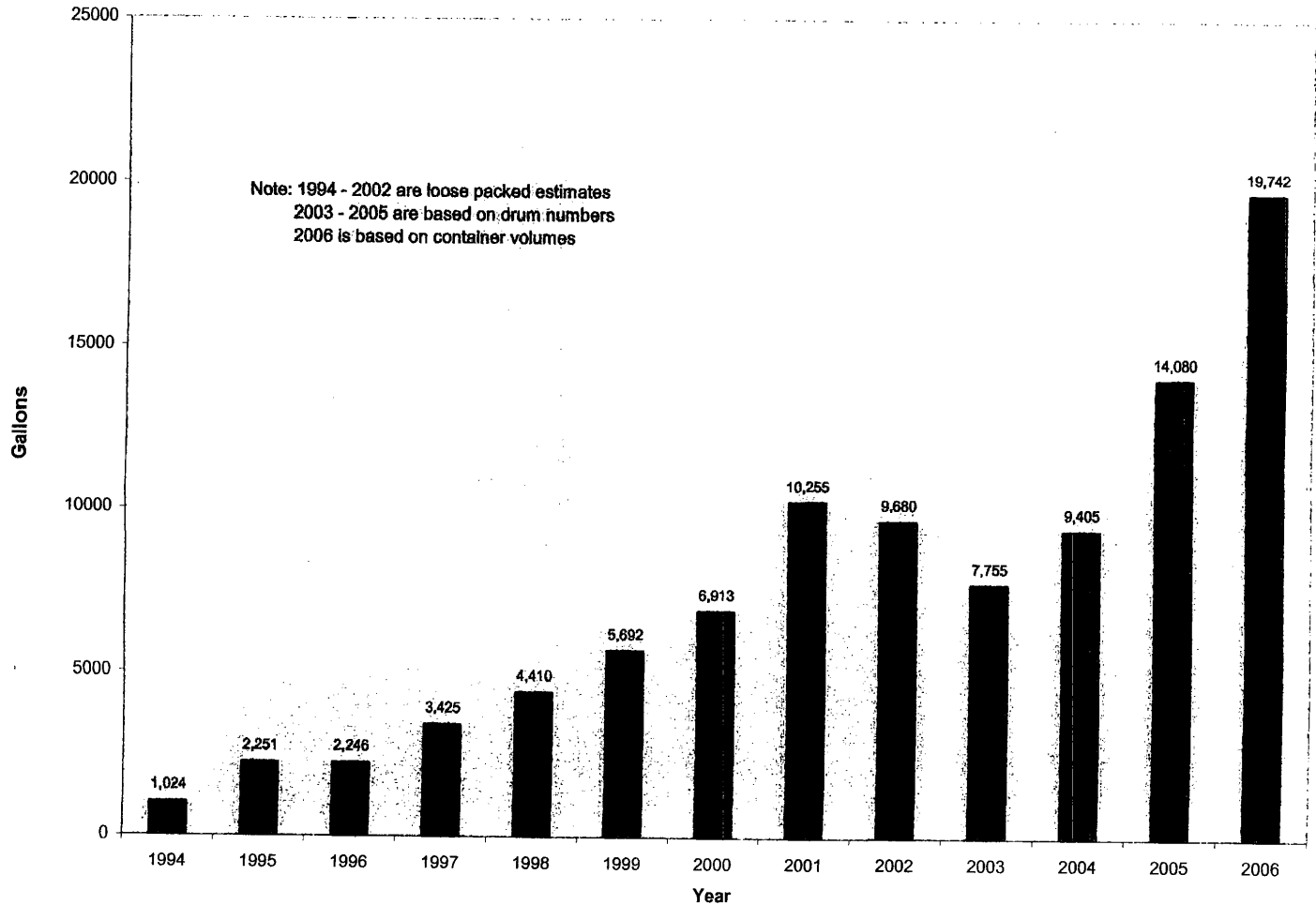
**Paper 1990 - 2006**  
**(Does not include curbside recycling paper or newspaper/mixed paper)**



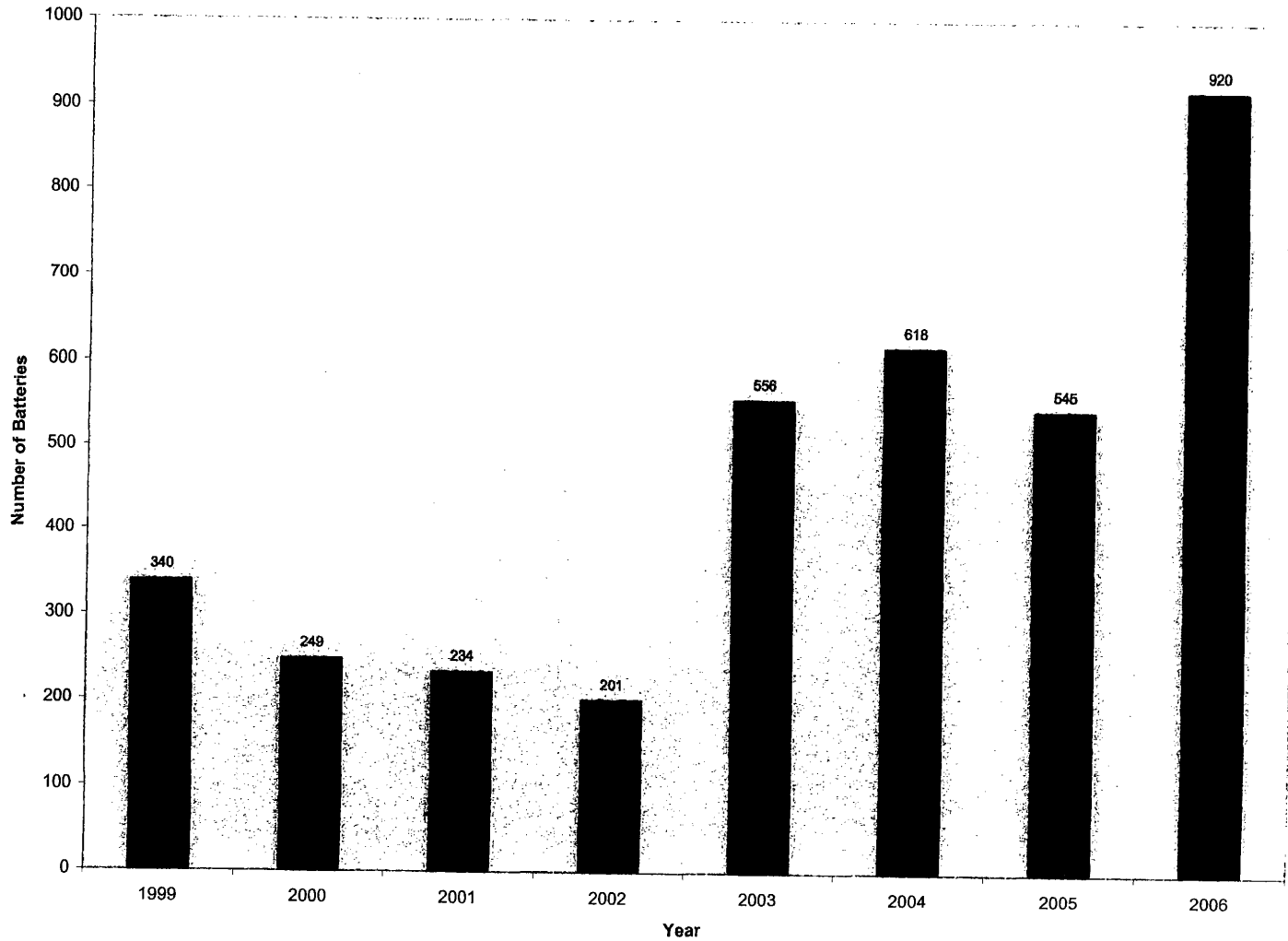
**Used Oil for Recycling 1990 - 2006**  
(Not including used oil burned for heat or collected through HHW Collection Program)



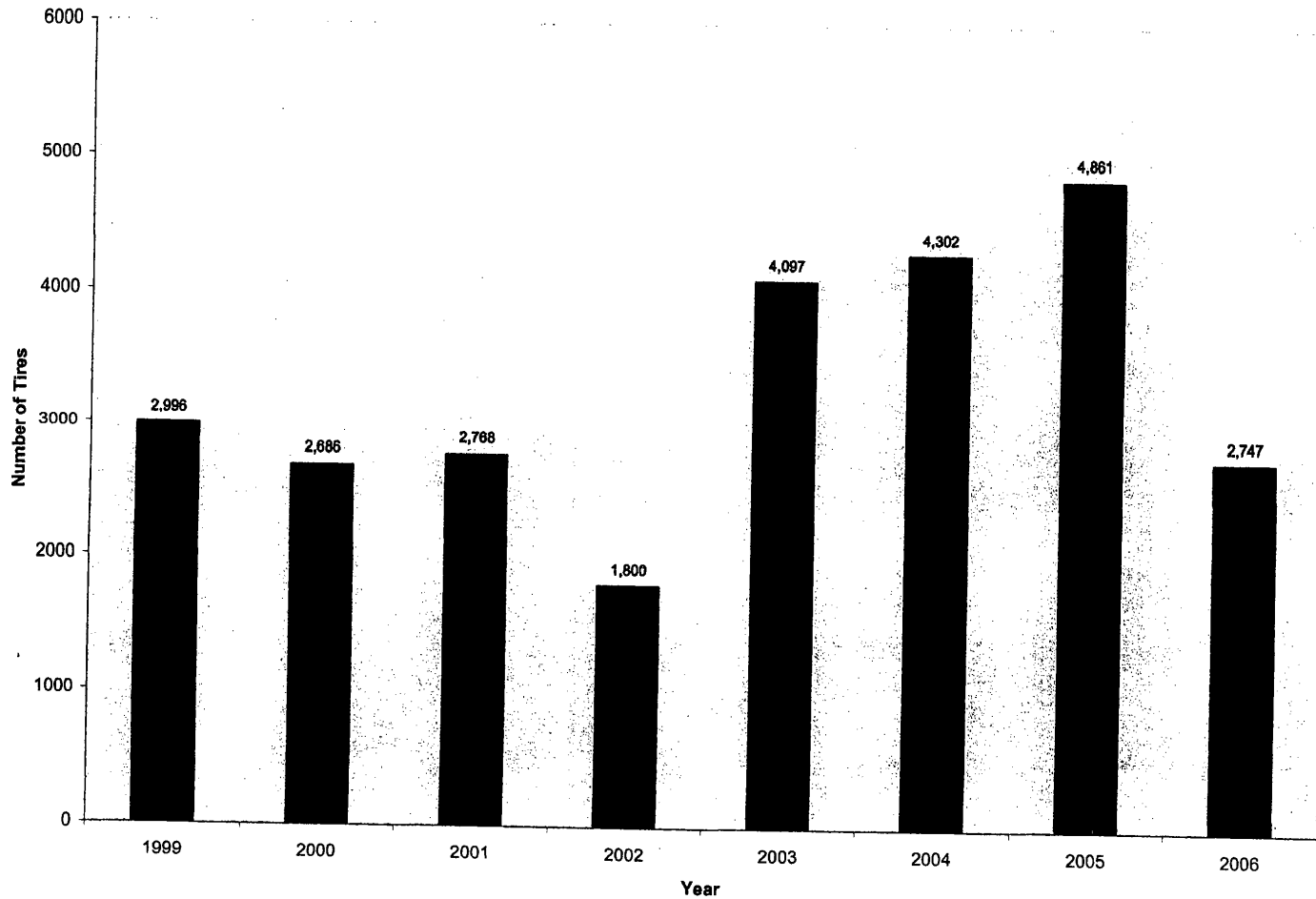
## Household Hazardous Waste Collected 1994 - 2006



# Lead Acid Batteries Sent for Recycling 1999 - 2006



### Tires Sent for Recycling 1999 - 2006



## **Calculations and References (Appendix B)**

# Calculations

Number of Operating Days\* = 52 weeks x 7 days per week – (52 Sundays + 7 Holidays) = 305 days

Tons per Day = Total Yearly Tonnage Received / Number of Operating Days

\*Operating Days means days open to public use. This amount may vary slightly from year to year as the number of holidays may vary slightly from year to year. For the calculations made in this report it was assumed that the Number of Operating days each year was 305 days.

# References

Logan City Sanitary Landfill Class I Permit Application, IGES New permit date March 25, 2002.

Logan City Composting Operational Plan, The City of Logan Department Environmental Health, Jan. 1996.

Logan City Class IVb Landfill Permit, The City of Logan Department of Environmental Health, March 10, 2005.

Logan City Landfill Annual Report, The City of Logan Department of Environmental Health, 1999 & 2005.

Logan City Class IVb Landfill Annual Report, The City of Logan Department of Environmental Health, 1999 & 2005.

Comprehensive Annual Financial Report Logan City Fiscal Year Ended June 30, 2006, The City of Logan Department of Finance, 2006.





# FIVE-YEAR SOLID WASTE MANAGEMENT MASTER PLAN

***SUBMITTED BY:***

**LBA ASSOCIATES**  
532 Clarkson St.  
Denver, CO 80218

**In Conjunction With:**  
**ANN ZIMMERMAN ASSOCIATES – Heber City, UT**  
**HDR ENGINEERING, INC. – Salt Lake City, UT**  
**BRAD MERTZ – Springville, UT**

**JANUARY 28, 2005**

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<b>AVG</b>	<b>Average</b>
<b>CA</b>	<b>Collection / Administrative</b>
<b>CAC</b>	<b>Citizens Advisory Committee</b>
<b>C&amp;D</b>	<b>Construction and demolition</b>
<b>CESQG</b>	<b>Conditionally-exempt small quantity generator</b>
<b>CSA</b>	<b>County Service Area</b>
<b>CY</b>	<b>Cubic yard</b>
<b>DOT</b>	<b>U.S. Department of Transportation</b>
<b>EMP</b>	<b>Employee</b>
<b>FY</b>	<b>Fiscal year</b>
<b>GW</b>	<b>Green waste</b>
<b>HH</b>	<b>Household</b>
<b>HHW</b>	<b>Household hazardous waste</b>
<b>LBS</b>	<b>Pounds</b>
<b>LF</b>	<b>Landfill</b>
<b>M</b>	<b>Million</b>
<b>MCL</b>	<b>Mercury-containing lamp</b>
<b>MRF</b>	<b>Materials recovery facility</b>
<b>MFU</b>	<b>Multi-family units</b>
<b>MSW</b>	<b>Municipal solid waste</b>
<b>MTH</b>	<b>Month</b>
<b>MUA</b>	<b>Modified Urban Area</b>
<b>NA</b>	<b>Not available</b>
<b>NAIC</b>	<b>National Association of Industry Codes</b>
<b>OCC</b>	<b>Old corrugated cardboard</b>
<b>OMG</b>	<b>Old magazines</b>
<b>ONP</b>	<b>Old newspaper</b>
<b>POR</b>	<b>Public Outreach</b>
<b>SFU</b>	<b>Single-family units</b>
<b>SPRA</b>	<b>Southwest Public Recycling Association</b>
<b>SWAB</b>	<b>Solid Waste Advisory Board</b>
<b>SWMP</b>	<b>Solid Waste Management Plan</b>
<b>TC</b>	<b>Technical Committee</b>
<b>TPD</b>	<b>Tons per day</b>
<b>UBC</b>	<b>Used beverage container</b>
<b>UDEQ</b>	<b>Utah Department of Quality</b>
<b>USU</b>	<b>Utah State University</b>
<b>WK</b>	<b>Week</b>
<b>WR</b>	<b>Waste reduction</b>
<b>YR</b>	<b>Year</b>



Mail Tax Notice To  
Address

## WARRANTY DEED

GLACIUS GREGORY MERRILL and JOAN T. MERRILL, husband and wife  
of Logan, County of Cache, State of Utah, hereby  
CONVEY and WARRANT to

LOGAN CITY

of Logan, City, County of Cache, State of Utah  
TEN and other valuable consideration ----- DOLLARS.  
the following described tract of land in Cache County,  
State of Utah:

The West Half of Lot 4, in Block 27, Plat "E" LOGAN WEST FIELD  
FARM SURVEY; also the West Half of Lot 5 in Block 27, Plat "E"  
LOGAN FARM SURVEY, situate in the Southeast Quarter of Section  
31, Township 12 North, Range 1 East of the Salt Lake Meridian.

05-060-0003

WITNESS, the hand of said grantor, this 27TH day of  
FEBRUARY, A. D. 1978

Signed in the Presence of

Gladius Gregory Merrill  
Gladius Gregory Merrill

Joan T. Merrill  
Joan T. Merrill

STATE OF UTAH } ss.  
County of Cache

On the 27th day of February A.D. 1978

Personally appeared before me

GLACIUS GREGORY MERRILL and JOAN T. MERRILL, husband and wife  
the signer of the within instrument, who duly acknowledged to me that they executed the same

Recording Date

411849

FEE (\$4.00)

STATE OF UTAH } ss  
COUNTY OF CACHE }  
FILED AND RECORDED FOR  
City of Logan  
MAR 30 1 02 PM '78

MICHAEL L. GLEED  
COUNTY RECORDER  
DEPUTY

Reading at Logan Utah  
My Commission Expires: July 8, 1980

NOTARY PUBLIC  
Casper Little Company, Inc.  
180 NORTH 400 EAST, SUITE C  
P.O. BOX 98  
LOGAN, UTAH 84301  
PHONE: 725-2402

BOOK 227 PAGE 505

# WARRANTY DEED

JOSEPH DEWAIN BERGER, also known as J. Dewain Berger, also known as Dewain Berger, and Barbara F. Berger, aka Barbara Berger, husband and wife, grantors of this, to North Logan, Utah, County of Cache, State of Utah, hereby CONVEY and WARRANT to WAR. F. HINTER, or their successors, as JOSEPH DEWAIN BERGER and BARBARA F. BERGER, or their successors, as Trustees of the Joseph Dewain Berger and Barbara F. Berger Family Living Trust, signed February 2, 1984

2629 North 1200 East, North Logan, Utah 84321  
 2829 North 1200 East, North Logan, Utah 84321  
 for the sum of \$1.00 and of land in Cache  
 the following described tract of land in  
 Three pages attached hereto.  
 Three pages attached hereto.

County, State of Utah:

WITNESS, the hands of said grantors, this 22nd

day of January A.D. 1992.

Signed in the presence of

*[Signature]*

*[Signature]*  
*[Signature]*

STATE OF UTAH  
 County of Cache  
 On the 22nd day of January A.D. 1992 personally appeared before me Joseph Dewain Berger and Barbara F. Berger

the signers of the within instrument, who duly acknowledged to me that they executed the same.

*[Notary Seal]*  
 Notary Public  
 State of Utah  
 LAND TITLE COMPANY

RECORDING DATA  
 Entry No. Fee \$  
 RECORDED ☐ INDEXED ☐  
 PLATTED ☐ ABSTRACTED ☐  
 COMPAKED ☐ DELIVERED ☐

ENT 553568 Bx 514 Pg 118  
 DATE 23-JAN-1992 12:57pm FEE 16.50  
 MICHAEL L GLEED, RECORDER - FILED BY SA  
 CACHE COUNTY, UTAH  
 FOR HICKMAN LAND TITLE COMPANY

5-60-4

Part of the South half of the Southeast quarter of Section 11, Township 12 North, Range One East of the Salt Lake Base and Meridian, described as follows:

Beginning at a point 27.85 rods North and 91 rods West of the Southeast corner of said Section 11, and running thence North 10.65 rods; thence East 9 rods; thence South 10.65 rods; thence West 9 rods to the place of beginning.

TOGETHER WITH A RIGHT OF WAY OVER:

Beginning at a point 82 rods South of a point 92 rods West of the Northeast corner of the Southeast quarter of said Section 11, and running thence South 76 rods; thence East one rod; thence North 36.5 rods; thence East 9 rods; thence South 31.95 rods to a point 75 feet North of the North line of a field street; thence East one rod; thence North 31.95 rods; thence East 9 rods; thence North 1.5 rods; thence West 19 rods; thence North 38 rods; thence West one rod to the place of beginning.

Beginning at a point on the South line of the County Road 60 feet West of the East line of Lot 5, Block 27, Plat "E" Logan Westfield Survey, and running thence West on the South line of the County Road 600 feet, more or less to the West line of the East half of Lot 5 of the said Block 27; thence South 646 feet, more or less to the Southwest corner of the East half of the said Lot 5; thence East 660 feet, more or less to the Southeast corner of said Lot 5; thence North 538 feet more or less to a point 60 feet South of the said South line of County Road; thence Northwesterly 90 feet, more or less to the place of beginning.

The South half of the Southwest quarter of the Southeast of Section 11, Township 12 North, Range 1 East of the Salt Lake Base and Meridian.

The Southwest quarter of Section 36, in Township 13 North, Range 1 East of the Salt Lake Base and Meridian, containing 160 acres.

Part of Lots 3 and 6, Block 16, Plat "F" Logan Farm Survey, described as follows:

Beginning at a point on quarter section line 206.75 feet North of the intersection of the East line of the Northwest quarter of Section 14, Township 12 North, Range 1 East of the Salt Lake Base and Meridian, with the South line of said Lot 6, Block 16, and running thence West 362 feet; thence South 236.75 feet to the South line of said Lot 3; thence West 627 feet more or less to the Southwest corner of Lot 3, said Block 16; thence North 40 rods to the Northwest corner of said Lot 3; thence East 939 feet more or less to a point on quarter section line 371.25 feet North of the place of beginning; thence South 371.25 feet to the place of beginning, containing 102 acres more or less.

Part of Lots 3 and 6, Block 16, Plat "F" Logan Farm Survey, described as follows:

Beginning at a point 165 feet North of the intersection of the East line of the Northwest quarter of Section 14, Township 12 North, Range 1 East of the Salt Lake Base and Meridian, with the South line of said Lot 6, Block 16, and running thence West 362 feet; thence North 123.75 feet; thence East 362 feet; thence South 123.75 feet to the place of beginning, further described as being situate in the Northwest quarter of Section 14, Township 12 North, Range 1 East of the Salt Lake Base and Meridian.

Beginning 530 feet South of the Northwest Corner of the Northeast Quarter of Section 14, Township 12 North, Range 1 East of the Salt Lake Base and Meridian, and running thence East to Center line of the Logan Northern Canal; South and Easterly along said center line to a point 165 feet East and 460 feet South of beginning; West 165 feet; thence North 460 feet to beginning.

PARCEL 1: North 1200 East 2817 - beginning at the Southwest Corner of Lot 6, Block 16, Plat "F" LOGAN FARM SURVEY, and running thence West to a point 362 feet West of the East line of the Northwest Quarter of Section 14, Township 12 North, Range 1 East of the Salt Lake Base and Meridian, and running thence North 165 feet; thence East 362 feet to the East line of said Northwest Quarter; thence South 165 feet; thence West 320 feet to the beginning.

PARCEL 2: Beginning 23 rods and 9 feet North and 5 rods and 2 feet West of the Southwest Corner of the Northwest Quarter of Section 14, Township 12 North, Range 1 East of the Salt Lake Base and Meridian; thence West to the North LOGAN CORPORATION LIMIT LINE, North to a point in the North line of Lot 7, Block 16, Plat "B" LOGAN FARM SURVEY; thence East to the Northeast Corner of said Lot; thence South to the West bank of Logan Northern Canal; thence Southwesterly to the beginning.

PARCEL 3: Beginning at a point South 14.46 feet and West 2551.2 feet from the Northeast Corner of Section 9, Township 10 North, Range 2 East of the Salt Lake Base and Meridian; and running thence Southwesterly 236.5 feet along the Canyon Road; thence South  $34^{\circ}10'20''$  East 145 feet to the center of Black-Smith Fork River; thence Northeasterly to a point 41.5 feet South of the Beginning; thence North 41.5 feet to the beginning.

PARCEL 4: Beginning in the West Bank of the Logan and Richmond Canal 23 rods 9 feet North and 5 rods 2 feet West of the Southwest Corner of the Northeast Quarter of Section 14, Township 12 North, Range 1 East of the Salt Lake Base and Meridian, and running thence West 260 feet; thence South 681 feet to the West bank of Canal; thence Northeasterly along West bank of Canal 730 feet to the beginning.

WHEN RECORDED, MAIL TO:

City of Logan

P.O. BOX 527

Logan, UT 84321

ATT: Ray Hagie

Space Above for Recorder's Use

### Warranty Deed

JOSEPH DEWAIN BERGER and BARBARA F. BERGER, husband and wife, grantor,

of North Logan, County of Cache, State of Utah,

hereby CONVEY and WARRANT to

CITY OF LOGAN, a municipal corporation,

of Logan, County of Cache, State of Utah,

for the sum of Ten and no/100...and other valuable consideration..... DOLLARS,

the following described tract of land in Cache County, State of Utah, to-wit:

The North Half of the East Half of Lot 4, Block 27, Plat "E" Logan Farm Survey; located in the Southeast quarter, Section 31, Township 12 North, Range 1 East, Salt Lake Base and Meridian.

5-60-7

ENT 521427 BK 447 Pg 553  
DATE 6-APR-1989 2:10pm FEE 0.00  
MICHAEL L GLEED, RECORDER  
OF CACHE COUNTY, UTAH  
For CITY OF LOGAN

WITNESS the hand of said grantor, this 31<sup>st</sup> day of March, 1989.

Signed in the presence of

Joseph Dewain Berger  
Barbara F. Berger

STATE OF UTAH

COUNTY OF Cache

On this 31<sup>st</sup> day of March, 1989,

Joseph Dewain Berger and Barbara F. Berger

came before me and acknowledged to me that they executed the same.

1989, personally appeared before me

the signers of the above instrument.

Michael L. Gleed

Notary Public

Residing at Logan, UT

My Commission Expires: 8/15/90

BOOK 447 PAGE 553

STATE OF UTAH } SS  
COUNTY OF CACHE }  
FILED AND RECORDED FOR  
J. H. HARRIS  
MAR 20 9 45 AM '61

307636

BOOK 51 PAGE 550

WARRANTY DEED

IN BOOK 51 OF RECORD  
PAGE 550

WILLIAM F. LESKOV and IDA R. LESKOV, husband  
and wife,

GRETHER R. SMITH  
COUNTY RECORDER

DEPUTY D. G. HARRIS  
granted of Logan City  
CONVEY and WARRANT to

County of Cache

State of Utah, hereby

LOGAN CITY,  
a municipal corporation of  
the State of Utah

grantee of Cache County, State of Utah  
for the sum of \$10.00 and other valuable consideration  
the following described tract of land in Cache County, State of Utah:

The North part of Lot 3, Block 26, Plat "E" Logan Westfield Survey, bounded on the South by the Main Slough running East and West and containing 13 acres, more or less, and being situate in the Southwest quarter of Section 32, Township 12 North, Range One East of the Salt Lake Base and Meridian. X

Also, Beginning at the Northwest corner of the East three-fourths of Lot 8, Block 27, Plat "E" Logan Farm Survey, and running thence South 80° 30' East in the North line of said Lot 8, 15 chains, more or less to the Northeast corner of said Lot 8; thence South 1° 30' West on the East line of said Lot 8, 2.75 chains, more or less to the center of slough; thence following down the center of said slough in a general southwesterly direction to its intersection with the West boundary line of said three-fourths of said Lot 8; thence North 1° 30' East in the West boundary line of the East three-fourths of said lot 8, 7.80 chains, more or less to the place of beginning, containing 8 acres, more or less, and being situate in the Southwest quarter of Section 32, Township 12 North, Range One East of the Salt Lake Meridian. SUBJECT TO a right of way one rod wide along the North boundary of this described tract. X

10 shares of Logan Cow Pastures water stock  
Together with any and all water right and ditch rights appurtenant thereto.

WITNESS, the hand s of said grantor s , this

17th day of March A.D. 19 61.

Signed in the presence of

Ray C. Hargis

William F. Leskov  
Ida R. Leskov

STATE OF UTAH }  
County of Cache } ss.

On the 17th day of March  
A.D. 19 61 personally appeared before me

William F. Leskov and Ida R.  
Leskov, husband and wife,

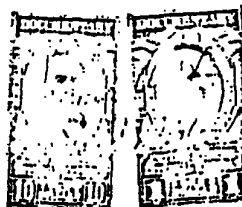
RECORDING DATA

Entry No.

Fee \$

RECORDED ☐ INDEXED ☐  
PLATTED ☐ ABSTRACTED ☐  
COMPARED ☐ DELIVERED ☐

Notary Public  
Notary Public  
Residing in Logan, Utah  
Commission expires: 8/25/64



## WARRANTY DEED

INA D. JESSOP, ALTON B. DAHLE and IOLA H. DAHLE, his wife, and  
DORIS D. JONES,

grantor & of the , County of Cache, State of Utah, hereby  
CONVEY and WARRANT to

LOGAN CITY CORPORATION, a Municipal Corporation,

grantee of Logan, Cache County, Utah,  
for the sum of \$10.00 and other valuable consideration,  
the following described tract of land in Cache County, State of Utah:

Beginning at a point 21 rods South of the North line  
of Lot 3, in Block 27, Plat "E", Logan West Field Survey,  
on the West line of James Larson tract of land, sold to  
him by Orson G. Beach; thence West 48½ rods; thence South  
to the creek; thence Northeasterly along the channel of said  
creek to the place of beginning, containing 10 acres, and  
further described as situated in the Southeast quarter of  
Section 31, Township 12 North, Range 1, East of the Salt  
Lake Meridian. y

WITNESS, the hands of said grantors, this 6th

day of August A. D. 1965

Signed in the presence of

*Alton B. Dahle*  
*Ina D. Jessop*  
*Iola H. Dahle*  
*Doris D. Jones*

STATE OF UTAH

County of Cache ss.

On the 6<sup>th</sup> day of August  
A. D. 1965 personally appeared before me

INA D. JESSOP, ~~ALTON B. DAHLE~~ and  
~~DORA H. JONES, his wife,~~ and DORIS  
D. JONES,

the signer & of the within instrument, who duly  
acknowledged to me that they executed the same.



Commission Expires: 12-10-66 Notary Public  
Residing in Logan, Utah

## RECORDING DATA

Entry No. 335840 (Fee \$3.40)

RECORDED ☐ INDEXED ☐  
PLATTED ☐ ABSTRACTED ☐  
COMPARED ☐ DELIVERED ☐

STATE OF UTAH ss  
COUNTY OF CACHE  
FILED AND RECORDED FOR  
HICKMAN LAND TITLE CO.  
AUG 16 11 29 AM '65

IN BOOK 93 OF RECORD  
PAGE 327-328  
GRETTA S. SMITH 888  
COUNTY RECORDER  
DEPUTY

LAND TITLE COMPANY

STATE OF UTAH ) SS  
COUNTY OF CACHE )  
FILED AND RECORDED FOR  
HICKMAN LAND TITLE CO.  
AUG 16 11 31 AM '65

335841  
(\$ 3.00)

BOOK

93 PAGE 329

IN BOOK 93 OF RECORD  
PAGE 329-330  
GRETTA B. SMITH & B.S.  
COUNTY RECORDER  
DEPUTY

## QUIT CLAIM DEED

CACHE COUNTY, a public corporation of the State of Utah, by Iver Larsen  
County Clerk, in and for said Cache County, grantor, hereby Quit Claims to  
Alton B. Dahle grantee  
of Logan County of Cache State of Utah  
for the sum of One DOLLARS.  
the following described tract of land in Cache County, State of Utah, to-wit:

Beginning at a point  $51\frac{1}{2}$  rods East and 1 rod South  
of the Northwest Corner of Lot 3, Block 27, Plat "E"  
Logan Farm Survey, and running thence East  $43\frac{1}{2}$  rods;  
thence South 20 rods; thence West  $48\frac{1}{2}$  rods; thence  
North 20 rods to the place of beginning, situate  
in the Southeast quarter of Section 31, Township 12  
North, Range 1 East Salt Lake Meridian, and containing  
6 acres x

5-60-9

This deed is given pursuant to a resolution of the Board of County Commissioners of said Cache  
County passed on the \_\_\_\_\_ day of August A. D. 1965 and is  
hereby given to convey all the right, title and interest acquired by Cache County under a certain Tax  
Sale  
bearing date on the CLARK day of JANUARY A. D. 1936 and recorded  
1935 Tax Sale Record  
in the office of the County Recorder of said Cache County, in Book 111 of Tax Deeds, page 111 line 11



IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal at my  
office in the City of Logan, County of Cache and State of Utah, this 13<sup>th</sup>  
day of August A. D. 1965

CACHE COUNTY, UTAH.

By

Iver Larsen  
County Clerk, Cache County, Utah.

Signed in presence of

Linda B. Hansen

OFF - 60

BOOK 93 PAGE 329

BOOK 114 PAGE 175  
**WARRANTY DEED**

ARIEL E. HUMPHREYS and DOROTHY HUMPHREYS  
husband and wife

grantors of Logan City, County of Cache, State of Utah, hereby  
CONVEY and WARRANT to

LOGAN CITY CORPORATION,  
a municipal corporation

grantee of Logan, Cache County, State of Utah  
for the sum of \$10.00 and other valuable consideration  
the following described tract of land in Cache County, State of Utah:

Beginning at the Northeast corner of the West half of Lot 1,  
Block 27, Plat "E" Logan West Field Farm Survey, and running thence  
South 40 rods; thence West 9 rods 13 1/4 feet; thence North 10 rods,  
more or less to slough running East and West; thence Westerly along  
the center of said slough to the West line of said lot; thence North  
on West line of said Lot, 24 rods, more or less, to slough; thence  
Northeasterly along said slough to a point 26 rods West of the place  
of beginning; thence East on the North line of said lot 26 rods,  
more or less, to the place of beginning, containing 7 1/4 acres, more  
or less, and further described as situated in the Southeast quarter  
of Section 31, Township 12 North of Range 1 East, and in the  
Northeast Quarter of Section 6, Township 11 North of Range 1  
East, Salt Lake Base and Meridian.

WITNESS, the hands of said grantors, this 9th day of July A.D. 19 68.

Signed in the presence of

Susan C. Lamb

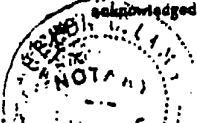
Ariel E. Humphreys  
Dorothy Humphreys

STATE OF UTAH  
County of Cache, ss.

On the 10th day of July  
A.D. 19 69 personally appeared before me

Ariel E. Humphreys and Dorothy  
Humphreys, husband and wife,

the signers of the within instrument, who duly  
acknowledged to me that they executed the same.



Susan C. Lamb  
Notary Public  
Commission expires: 5 June 1969  
Residing in Hyde Park, Utah

RECORDING DATA

Entry No. 349171 Fee \$ 2.00

RECORDED ☐ INDEXED ☐  
PLATTED ☐ ABSTRACTED ☐  
COMPARED ☐ DELIVERED ☐

STATE OF UTAH } ss  
COUNTY OF CACHE }  
FILED AND RECORDED FOR  
HICKMAN LAND TITLE CO  
AUG 15 9 21 AM '68

IN BOOK 114 OF RECORD  
PAGE 175  
BRETTE A. SMITH  
COUNTY RECORDER  
DEPUTY

LAND TITLE COMPANY

BOOK 114 PAGE 175

no fee

STATE OF UTAH } SS  
 COUNTY OF CACHE }  
 FILED AND RECORDED FOR  
 Logan City Corp.  
 JUL 30 3 35 PM '69

IN BOOK 120 OF RECORD  
 PAGE 756  
 GRETTE B. SMITH  
 COUNTY RECORDER  
 DEPUTY

## WARRANTY DEED

A. BURDELL DAHLE and wife PEGGY LOU DAHLE, Grantors of Logan City, Utah, hereby convey and warrant to LOGAN CITY CORPORATION, a municipal corporation of the State of Utah, grantee for and in consideration of the sum of \$1.00 and other valuable consideration, the following described land in Cache County, Utah, to-wit:

Beginning at the Northwest corner of Lot 3, Block 27, Plat E, Logan Farm Survey, and running thence East 51½ rods; thence South 67½ rods to the center of a slough; thence following said slough in a Westerly direction to a point which is due South from the point of beginning; thence North to the point of beginning. Y

also,

The South half of the East half of Lot 4, Block 27, Plat E, Logan Farm Survey, excepting a right-of-way over the East one rod of said property. Said property being further described and being situated in the Southeast quarter of Section 31, Township 12 North, Range One East of Salt Lake Base and Meridian. X

WITNESS, the hands of said grantors this 30<sup>TH</sup> day of

JULY

A.D. 1969.

A. Burdell Dahle

Peggy Lou Dahle

Signed in the presence of

DeLoe Peterson

STATE OF UTAH )  
 ) ss.  
 County of Cache)

On the 30<sup>TH</sup> day of JULY A.D. 1969 personally appeared before me A. BURDELL DAHLE and wife PEGGY LOU DAHLE, the signers of the within instrument, who duly acknowledged to me that they executed the same.

Marian H. Zerk  
 Notary Public



mail to  
Logan City, Utah

410232  
(5.00)

STATE OF UTAH... 35  
COUNTY OF CACHE  
FILED AND RECORDED FOR  
Cache Co Clerk  
FEB 1 1 28 PM '78

QUITCLAIM DEED

MICHAEL L. GLEED  
COUNTY RECORDER  
DEPUTY

CACHE COUNTY, a Municipal Corporation of the State of Utah, by  
SETH S. ALLEN, County Clerk in and for said Cache County, Grantor,  
hereby Quitclaims to LOGAN CITY, a Municipal Corporation, Grantee,  
of Logan, Cache County, Utah, for the sum of One Dollar and other  
valuable consideration, the following described property in Cache  
County, State of Utah, to-wit:

A portion of Lot 7, Block 28, Plat "E" Logan  
Farm Survey, also being in the Southeast Quarter  
of Section 11, Township 12 North, Range 1 East  
of the Salt Lake Base and Meridian, as follows:  
Beginning at a point 32.47 West of the West fence  
line of 19th West Street along the South right of  
way line of State Highway #30; and running thence  
South, parallel to and 33' West of Centerline of  
19th West, to intersection with the main channel  
of the slough. This point of intersection being  
true point of beginning. Thence South along said  
parallel line 620 feet, more or less; thence West  
315 feet, more or less, to main channel of said  
slough; thence Northerly and Easterly along center-  
line of said slough to the point of beginning, and  
containing approximately 3 acres.

5-60-10

05-060-0002 pt

This Deed is given pursuant to a resolution of the Board of  
County Commissioners of Cache County, Utah, dated the 31st day of  
January, 1978.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed  
my official seal at my office in Logan, Cache County, Utah, this  
31st day of January, 1978.

Signed in the presence of

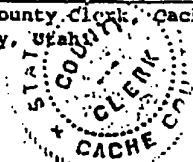
CACHE COUNTY, a Municipal Corporation

*Lisa G. Brown*

*Seth S. Allen*

SETH S. ALLEN, County Clerk, Cache  
County, Utah

STATE OF UTAH,  
County of Cache



On the 31st day of January, 1978, personally appeared before me  
SETH S. ALLEN, who being by me duly sworn, did say that he is the  
County Clerk of Cache County, Utah, and that the above instrument was  
signed in behalf of said Cache County by authority of a Resolution

BOOK 224 PAGE 654

STATE OF UTAH } SS  
COUNTY OF CACHE }  
FILED AND RECORDED FOR  
LOGAN CITY CORP  
FEB 6 10 59 AM '78

410353

(5.00)

QUIT CLAIM DEED

MICHAEL L GLEED  
COUNTY RECORDER  
DEPUTY

CACHE COUNTY, a municipal corporation of the State of Utah, by  
SETH S. ALLEN, County Clerk in and for said Cache County, Grantor,  
hereby Quit claims to LOGAN CITY, a municipal corporation of the  
State of Utah, Grantee, for the sum of Ten Dollars and other valuable  
consideration, the following described property in Cache County, Utah:

All of Lot 8, and parts of Lots 1, 3, 6, and 7, of  
Block 28, Plat "E" Logan Farm Survey, being bounded on the  
west by the main channel of a slough, on the East by 4 rods  
of field road, and on the South by the south line of Lot 1,  
LESS 3.04 acres, described as follows:

Beginning at a point 204 feet South, more or less, of the  
Northeast corner of Lot 6, Block 28, Plat "E" Logan Farm  
Survey, and running thence 620 feet South, more or less,  
along the West edge of an existing field road; thence  
West 315 feet, more or less, to the main channel of a  
slough; thence Northeasterly along the main channel of the  
slough to the point of beginning.

Containing a net acreage of 33.27 acres, more or less.

05-060-0002 pl.

The above property is conveyed to Logan City to be used  
as a public landfill for all citizens of Cache County and/or for  
public recreational purposes to all residents of Cache County pursuant  
to that certain Agreement entered into between the parties dated the  
18th day of June, 1974, to which Agreement reference is hereby made  
for the particulars thereof.

WITNESS the hand of said Grantor this 25 day of May  
1976.

Witness:

CACHE COUNTY, a municipal corporation

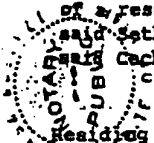
*[Signature]*

*[Signature]*  
Cache County Clerk

STATE OF UTAH, )  
                  ) ss.  
County of Cache, )



On the 25 day of May, 1976, personally appeared  
before me Seth S. Allen, the Cache County Clerk, the signer of the  
within instrument, who duly acknowledged to me that he is the Cache  
County Clerk and that he executed the within instrument by authority  
of a resolution of the Board of Cache County Commissioners, and that  
said Seth S. Allen acknowledged that he signed the same on behalf of  
said Cache County, a municipal corporation.



Residing at Logan, Utah, 10 76  
My commission expires Oct. 15, 1978

*[Signature]*  
Notary Public

BOOK 224 PAGE 864

CACHE TITLE  
# 1464

## QUIT CLAIM DEED

[CORPORATE FORM]

### CITY OF LOGAN

a corporation organized and existing under the laws of the State of Utah, grantor, with its principal office  
at Logan, County of Cache, State of Utah, hereby QUIT CLAIMS to

GLACUS GREGORY MERRILL

grantee of Logan, Utah  
for the sum of Ten Dollars and other valuable consideration-----  
the following described tract of land in Cache County, State of Utah:

The West Half of Lot 5 in Block 27, Plat "E", Logan Farm Survey,  
situate in the Southeast Quarter of Section 31, Township 12 North,  
Range 1 East of the Salt Lake Meridian.

~~05-060-0003-7~~ 5-60-11

418076

FEE \$4.00

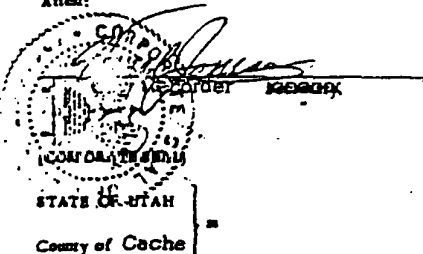
STATE OF UTAH  
COUNTY OF CACHE  
FILED AND RECORDED FOR  
CACHE TITLE CO.  
OCT 30 2 50 PM '78

MICHAEL G. GLEED  
COUNTY RECORDER  
DEPUTY

The officers who sign this deed hereby certify that this deed and the transfer represented thereby was duly  
authorized under a resolution duly adopted by the board of directors of the grantor at lawful meeting duly  
held and attended by a quorum.

In witness whereof, the grantor has caused its corporate name and seal to be hereunto affixed by its duly  
authorized officers this 26th day of October, A. D. 1978

Attest:



CITY OF LOGAN

by

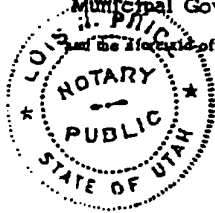
Walter Nickel  
Mayor

STATE OF UTAH

County of Cache

On the 26th day of October, A. D. 1978 personally  
appeared before me Walter N. Nickel and Venal Jones  
who, being by me duly sworn, did say that they are the  
Mayor and City Recorder  
City of Logan  
respectively of the  
said instrument was signed in behalf of said corporation by authority of The Optional Forms of  
Municipal Government Act

and the officers acknowledged to me that said corporation executed the same.



Lois N. Price  
Notary Public  
Commission expires: March 15, 1982  
Residing in Logan, Utah

The Land Title Company

BOOK 240 PAGE 343

Mail Tax Notice to:  
Address

# WARRANTY DEED

WILLIAM O. WORLEY and SUSAN J. WORLEY

of LOGAN, County of CACHE, State of Utah, hereby  
CONVEY and WARRANT to

CITY OF LOGAN

of 1747 WEST 200 SOUTH, LOGAN, UT 84321  
Ten Dollars and other valuable consideration

grantee  
for the sum of

the following described tract of land in Cache County,  
State of Utah:

Part of the Northeast Quarter of Section 6, Township 11 North, Range 1 East of the Salt Lake Base and Meridian and part of the Southeast Quarter of Section 31, Township 12 North, Range 1 East of the Salt Lake Base and Meridian, described as follows:

Beginning at a point in the North right of way line of a County Road, said point being West 326 feet from the Southeast Corner of Lot 2, Block 27, Plat "A" LOGAN FARM SURVEY, and running thence North 357 feet to the South bank of Spring Creek Slough, thence Running Westerly following the meanderings of the South bank of Spring Creek Slough, to its point of intersection with the North right-of-way line of said County Road at a point West 684 feet from the point of beginning; thence East 690 feet by measurement (684 feet by record) to the point of beginning. All courses with respect to local variation.

WITNESS, the hand of said grantor, this 15TH day of  
DECEMBER, A.D. 19 93

Signed in the Presence of

*William O. Worley*  
WILLIAM O. WORLEY  
*Susan J. Worley*  
SUSAN J. WORLEY

STATE OF UTAH, } ss. On the 15TH day of DECEMBER A. D. 19 93  
County of CACHE }

Personally appeared before me WILLIAM O. WORLEY and SUSAN J. WORLEY

the signer of the within instrument, who duly acknowledged to me that he executed the same.

Recording Data

*Annette J. Kent*  
(NOTARY PUBLIC)

Residing at

LOGAN, UT  
My Commission Expires:

NOTARY SEAL: 11/19/94



CACHE TITLE COMPANY

Title Insurance & Escrows  
193 NORTH MAIN - SECOND FLOOR  
LOGAN, UTAH 84321  
TELEPHONE: (801) 755-2467

ENT 590494 Bk 591 Pg 629  
DATE 17-DEC-1993 1:04pm FEE 0.00  
MICHAEL L GLEED, RECORDER - FILED BY CH  
CACHE COUNTY, UTAH  
FOR CACHE TITLE COMPANY

# WARRANTY DEED

GLACUS G. MERRILL, DARLA DEAN CLARK and G. GREGORY MERRILL, as Co-Trustees, Grantors of Logan, County of Cache, State of Utah, hereby CONVEYS and WARRANTS to G. GREGORY MERRILL and DARLA DEAN CLARK, as Co-Trustees of the Glacus G. Merrill and Marie B. Merrill Family Living Trust, Grantees of 605 West Haven Drive, Logan, Utah, 84321, for the sum of Ten Dollars (\$10.00) and other good and valuable consideration, the following described tract of land in Cache County, State of Utah:

The East half of Lots 4 and 5, Block 26, Plat "E", Logan West Field Survey, situate in the Southwest Quarter of Section 32, Township 12 North, Range 1 East. Containing 20 acres less .10 acres for State Road. Containing in all net 19.90 acres. (Parcel No. 05-063-0001)

Subject to:

- (a) Easements, or claims of easements, not shown by the public records.
- (b) Encroachments, or questions of location, boundary, and area which are dependant upon a correct survey or inspection of the premises for determination.
- (c) Unpatented mining claims; reservations or exceptions in patents or in acts authorizing the issuance thereof.

WITNESS, the hand of said Grantors, this 2<sup>nd</sup> day of February, A.D. 1994.

Signed in the presence of

Julie H. Nelson

Glacus G. Merrill  
Glacus G. Merrill, Co-Trustee  
Darla Dean Clark  
Darla Dean Clark, Co-Trustee  
G. Gregory Merrill  
G. Gregory Merrill, Co-Trustee

STATE OF UTAH )  
County of Cache )

ss.

RECORDING DATA  
Entry No. Fee \$

On the 2nd day of February, A.D. 1994 personally appeared before me GLACUS G. MERRILL, DARLA DEAN CLARK and G. GREGORY MERRILL, Co-Trustees, the signers of the within instrument, who duly acknowledged to me that they executed the same, as Co-Trustees.

ENT 593820 Bk 598 Pg 14  
DATE 7-FEB-1994 4:03PM Fee 12.00  
MICHAEL L GLEED, RECORDER - FILED BY CH  
CACHE COUNTY, UTAH  
FOR OLSON & HOGGAN

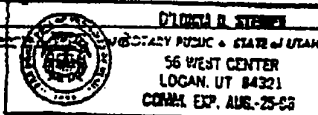
L. Donna M. Steiner  
NOTARY PUBLIC

Commission Expires:

Residing in

wpd/bhb/e/me

N-5687.1



05-063-0001

(232724)

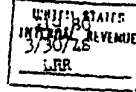
## WARRANTY DEED

L. Ray Robinson and Alta J. Robinson, his wife grantors of Logan, County of Cache, State of U. hereby CONVEY and WARRANT to State of Utah grantees of Salt Lake City, Utah for the sum of Eighteen Dollars (\$18,000.00) DOLLARS, the following described tracts of land in Cache County, State of Utah:

The west half of Lots Four (4) and Five (5) Block Twenty-seven Plat "B" Logan West Field Survey. Situated in the Southwest Quarter of Section 32, Township 12 North Range One East of Salt Lake also the East 3/4 of Lot 6 and the East 1/2 and the North half of the west half of Lot 7, all in 27, First E Logan West Field Survey. Said property being situated in southwest quarter of Section 31, Township 12 North Range 1 East of Salt Lake.

WITNESSED the hands of said grantors, this 30th day of March, A. D. 1948.

Signed in the Presence of  
Margaret C. Hickman  
Louis C. Hickman



L. Ray Robinson  
Alta J. Robinson

5-63

STATE OF UTAH, )  
 ) ss.  
County of Cache )

On the 30th day of March, A. D. 1948 personally appeared before me L. Ray Robinson and wife, Alta Robinson the signers of the within instrument, who duly acknowledged to me that they executed the same.

(NOTARIAL SEAL)

Margaret C. Hickman  
Notary Public.

My commission expires 12 January 1951.  
Residing in Logan, Utah.

Filed for Record May 6, A. D. 1948 at 10:55 o'clock AM

(232725)

## WARRANTY DEED

Emma G. Butters, a widow grantor of Clarkston, Cache County, Utah hereby convey and warrant to Va. Butters grantee of Clarkston, Cache County, Utah for the sum of One Dollars Love and Affection DOLLARS the following described tract of land in City, Cache County, Utah:

Beginning at a point 30 rods south of the northwest corner of the north west quarter of Section 5, Township 14 North of Range 2 West of the Salt Lake Meridian, and running thence east 120 rods; thence south 20 rods; thence west 120 rods; thence north 80 rods to the place of beginning, containing 60 acres.

RESERVING unto the grantor herein a Life Estate in and to the above described lands, together with rents, issues and profits therefrom for and during her natural life.

Witness the hand of said grantor this 6th day of May A. D. 1948

Signed in the Presence of  
O. S. Crockett

Emma G. Butters

STATE OF UTAH, )  
 ) ss.  
County of Cache )

On this 6th day of May A. D. 1948, before me O. S. Crockett a notary public in and for Cache County State of Utah, personally appeared Emma G. Butters, a widow the signer of the above instrument, who duly acknowledged to me that she executed the same.

(NOTARIAL SEAL)

O. S. Crockett  
Notary Public.

My commission expires Mar. 13, 1949  
Residing at Logan, Utah.

Filed for Record May 6 A. D. 1948 at 12:35 o'clock PM

(232726)

## WARRANTY DEED

J. I. Tolson and wife Everett B. Tolson grantors of Logan City, Cache County, State of Utah hereby convey and warrant to Eldred L. Waldron and wife Inez T. Waldron as joint tenants and not as tenants in common with full rights of survivorship grantees of Logan City, Cache County, State of Utah for the sum of ten thousand and no/100 DOLLARS and love and affection, the following described tract of land in Logan City Cache County, State of Utah:

Beginning at a point 2-1/2 rods North of the Southwest corner of Lot 5, Block 14, Plat "C" of Logan City Survey, thence east 9 rods to east line of said Lot; thence north 2-1/2 rods; thence West 9 rods thence South 2-1/2 rods to the place of beginning; together with any and all water rights thereunto belonging or in anywise appertaining.

Grantees assume taxes for the year 1948 and thereafter

## WARRANTY DEED

L. Ray Robinson and Alta J. Robinson, husband and wife, grantors of Logan City,, County of Cache, State of Utah, hereby CONVEY and WARRANT to THE STATE OF UTAH grantee for the sum of \$10.00 and other valuable consideration the following described tract of land in Cache County, State of Utah:

The West half of Lots four (4) and Five (5) in Block Twenty-six (24), Plat "F" Logan West Field Survey, situate in the Southwest quarter of Section 32, Township 12 North, Range One (1) East of the Salt Lake Meridian, containing 20 acres, less State Road.

This deed is given to correct an error made in a former deed filed May 6, 1948 and recorded in Book 87 of Deeds at page 99 in the office of the County Recorder of Cache County, Utah in which the property intended to be conveyed was erroneously described as being located in Block 27, Plat "F" Logan West Field Survey of said Southwest quarter of Section 32, Township 12 North, Range 1 East of the Salt Lake Meridian.

WITNESS, the hands of said grantors, this 8th day of October, A. D. 1951.

Signed in the presence of  
Clinton D Vernon

L Ray Robinson  
Alta J. Robinson

STATE OF UTAH )  
 ) ss.  
County of Cache )

On the 8th day of October A. D. 1951 personally appeared before me L. Ray Robinson and Alta J. Robinson, husband and wife, the signer of the within instrument, who duly acknowledged to me that they executed the same..

(NOTARIAL SEAL)

Geo D Preston  
Notary Public  
Residing in Logan Utah

My Commission expires: July 10, 1953

HICKMAN ABSTRACT COMPANY Logan, Utah

RECORDING DATA

Filed for Record October 11, A. D. 1951 at 4:05 o'clock P. M.

(253936)

## WARRANTY DEED

Ellen Nelson Pitcher also known as Nellie Pitcher grantor of Smithfield, Cache County, Utah hereby conveys and warrants to Harley W. Monson and his wife Leah S. Monson, with right of survivorship as joint tenants, and not as tenants in common. grantees of Smithfield, Cache County, Utah for the sum of One and 00/100 DOLLARS the following described tract of land in Smithfield City Cache County, State of Utah:

Commencing at a point Twenty eight and twelve hundredths (28.12) chains north, Nine and sixty hundredths (9.60) chains west along the south line of Street and five (5) chains north along the west line of street from the Southeast corner of the Northwest quarter of Section Twenty Eight (28) Township Thirteen (13) North of Range One (1) East of the Salt Lake Meridian, United States Survey for Utah; thence running west nine and seventy four hundredths (9.74) chains; thence North Five (5) chains; thence East by South along the South line of Street eight and fifty hundredths (8.50) chains; thence south by east two and sixty hundredths (2.60) chains to the place of beginning and containing Three and one hundred forty eight thousandths (3.148) acres more or less.

WITNESS the hand of said grantor this 8th day of April A. D. 1949.

Signed in the presence of  
H Randall Hillyard

\$1.10

Ellen N. Pitcher

STATE OF UTAH )  
 ) ss.  
COUNTY OF Cache )

On this 11th day of April A. D. 1949 before me H. Randall Hillyard a notary public in and for Cache County, State of Utah, personally appeared Ellen Nelson Pitcher also known as Nellie Pitcher the signer of the above instrument, who duly acknowledged to me that she executed the same.

(NOTARIAL SEAL)

H. Pandall Hillyard  
Notary Public.  
Logan, State of Utah

My commission expires July 14, 1952

Filed for Record October 13, A.D. 1951 at 11:05 o'clock A. M.

(253944)

## WARRANTY DEED

Boyd H. Karren and his wife, Carma B. Karren grantors of Lewiston, Cache, County of Cache, State of Utah, hereby CONVEY and WARRANT to Grant M. Feltman and his wife, Katherine S. Feltman and The Survivor as Joint Tenants and not as Tenants in Common grantees of Lewiston, Cache County, Utah for the sum of Three Thousand Five Hundred and No/100 the following described tract of land in Lewiston, Cache County, State of Utah:

STATE OF UTAH } SS  
COUNTY OF CACHE }  
FILED AND RECORDED FOR  
*Newman Harris*  
MAR 20 9 45 AM '61

307636

BOOK 51 PAGE 550

*no fee*  
**WARRANTY DEED**

WILLIAM F. LESKOW and IDA R. LESKOW, husband  
and wife,

IN BOOK 51 OF RECORD  
PAGE 550

GNETTA R. SMITH  
COUNTY RECORDER

DEPUTY *D. B. H.*  
granted of Logan City  
CONVEY and WARRANT to

, County of Cache

, State of Utah, hereby

LOGAN CITY,  
a municipal corporation of  
the State of Utah

grantee of Cache County, State of Utah  
for the sum of \$10.00 and other valuable consideration  
the following described tract of land in Cache

County, State of Utah:

The North part of Lot 3, Block 26, Plat "F" Logan Westfield Survey, bounded on the South by the Main Slough running East and West and containing 13 acres, more or less, and being situate in the Southwest quarter of Section 32, Township 12 North, Range One East of the Salt Lake Base and Meridian. X

05-063-0005

Also, Beginning at the Northwest corner of the East three-fourths of Lot 8, Block 27, Plat "F" Logan Farm Survey, and running thence South 88° 30' East in the North line of said Lot 8, 15 chains, more or less to the Northeast corner of said Lot 8; thence South 1° 30' West on the East line of said Lot 8, 2.75 chains, more or less to the center of slough; thence following down the center of said slough in a general southwesterly direction to its intersection with the West boundary line of said three-fourths of said Lot 8; thence North 1° 30' East in the West boundary line of the East three-fourths of said lot 8, 7.80 chains, more or less to the place of beginning, containing 8 acres, more or less, and being situate in the Southwest quarter of Section 32, Township 12 North, Range One East of the Salt Lake Meridian. SUBJECT TO a right of way one rod wide along the North boundary of this described tract. X

05-060-0009

5-63-5

shares of Logan Cow Pastures water stock  
Together with any and all water right and ditch rights appurtenant thereto.

WITNESS, the hand s of said grantor s , this

17<sup>th</sup> day of March A.D. 19 61.

Signed in the presence of

*Ray C. Hargis*

*William F. Leskov*

*Ida R. Leskov*

STATE OF UTAH

County of Cache

ss.

On the 17th day of March  
A. D. 19 61 personally appeared before me

William F. Leskov and Ida R.  
Leskov, husband and wife,

RECORDING DATA

Entry No.

Fee 3

RECORDED ☐ INDEXED ☐  
PLATTED ☐ ABSTRACTED ☐  
COMPARED ☐ DELIVERED ☐

I, *Notary Public*, of the within instrument, who duly  
acknowledged to me that they executed the same.  
*Notary Public*  
Commission expires: 8/29/64  
Residing in Logan, Utah



## WARRANTY DEED

GARY M. LARSEN AND SHARON LARSEN,  $\frac{1}{2}$  interest and  
STEVEN J. LARSEN AND SONJA LARSEN,  $\frac{1}{2}$  interest

grantor of Logan, Utah County of Cache  
State of Utah, hereby CONVEY and WARRANT to

CITY OF LOGAN

grantees of 61 West 100 N., Logan, Utah 84321  
for the sum of TEN DOLLARS and other good and valuable consideration.  
the following described tract of land in Cache County, State of Utah:

All of Lot 2, and that part of Lot 3 lying South of Spring Creek,  
Block 26, Plat "E" Logan Farm Survey and further described as being  
situate in the Northwest Quarter of Section 5, Township 11 North,  
Range 1 East of the Salt Lake Base and Meridian, and in the Southwest  
Quarter of Section 32, Township 12 North, Range 1 East of the Salt  
Lake Base and Meridian.

5-63-16

WITNESS, the hand of said grantor s. this 13th

day of June

A.D. 19 86

Signed in the presence of

Gary M. Larsen  
Gary M. Larsen

Sharon Larsen  
Sharon Larsen

Steven J. Larsen  
Steven J. Larsen

Sonja Larsen  
Sonja Larsen

STATE OF UTAH

ss.

County of Cache

On the 13th day of June

A.D. 19 86 personally appeared before me

Gary M. Larsen and Sharon Larsen,  
 $\frac{1}{2}$  interest, and  
Steven J. Larsen and Sonja Larsen,  
 $\frac{1}{2}$  interest

the signers of the foregoing instrument, who duly  
acknowledged to me that they executed the same.

[Signature]  
Notary Public  
Commission Expires 4/1/88  
Residing in Hydon Park, Utah

RECORDING DATA  
Entry No. 489541 Fee \$ No Fee

RECORDED ☐ INDEXED ☐  
PLATTED ☐ ABSTRACTED ☐  
COMPARED ☐ DELIVERED ☐

STATE OF UTAH  
(65)  
COUNTY OF CACHE  
FILED & RECORDED FOR  
MICHAEL L. O'LEED  
JUN 13 3 48 PM '86  
COUNTY RECORDER  
BY DEPUTY

LAND TITLE COMPANY

BOOK 376 PAGE 747

# QUIT CLAIM DEED

JEAN A. PARKER and GORDON L. PARKER, Grantors of Millville, County of Cache, State of Utah, hereby QUIT CLAIM to JEAN A. PARKER and GORDON L. PARKER, as Trustees of the Jean A. Parker and Gordon L. Parker Revocable Trust U/A/D May 19, 1993, Grantees of 259 East 300 South, Millville, Utah, 843265, for the sum of One Dollar (\$1.00), the following described tracts of land in Cache County, State of Utah:

5-63-11

## Parcel 1:

Beginning at the Southwest corner of the East half of Lot 1, Block 27, Plate Logan Farm Survey; thence North 26 rods; thence East 34 rods; thence South 26 rods; thence West 34 rods to beginning, in the Northwest Quarter of Section 5, Township 11 North, Range 1 East and the Southwest Quarter of Section 43, Township 12 North Range 1 East. Containing 4.79 acres, more or less.

## Parcel 2:

Beginning 11.24 chains West of a point 30.08 chains North of the Southeast corner of Section 22, Township 11 North, Range 1 East, thence West 2.5 chains; thence North 4 chains; thence East 2.5 chains; thence South 4 chains to beginning. Containing 1 acre, more or less.

## Parcel 3:

Beginning North 894.61 feet and East 1332.75 feet from the Southwest corner of Section 23, Township 11 North, Range 1 East, South 88°14', West 371 feet to the Southeast corner of Town Park, North 121.07 feet, North 88°06'50", East 348.46 feet to a point in the West line of Ezra Nixon Jr.'s property; thence South 10°33', East 123.18 feet to point of beginning with right-of-way.

## Subject to:

- (a) Easements, or claims of easements, not shown by the public records.
- (b) Encroachments, or questions of location, boundary, and area which are dependant upon a correct survey or inspection of the premises for determination.
- (c) Unpatented mining claims; reservations or exceptions in patents or in acts authorizing the issuance thereof.

WITNESS, the hand of said Grantors, this 19th day of May, A.D. 1993.

Signed in the presence of

*Mary Lynn Hawthorn*

*Jean A. Parker*  
Jean A. Parker  
*Gordon L. Parker*  
Gordon L. Parker

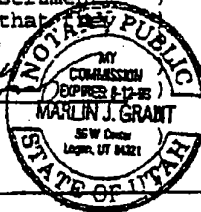
STATE OF UTAH )  
County of Cache )

: ss.

RECORDING DATA  
Entry No. Fee \$

On the 19th day of May  
A.D. 1993 personally appeared before me  
JEAN A. PARKER and GORDON L. PARKER,  
the signers of the within instrument,  
who duly acknowledged to me that they  
executed the same.

*M. J. Grant*  
NOTARY PUBLIC



Commission Expires:  
Residing in  
wpd/mjg/e/parker.qcd

ENT 576803 Bk 562 Pg 1120  
DATE 19-MAY-1993 4:49PM FEE 12.00  
MICHAEL L GLEED, RECORDER - FILED BY CH  
CACHE COUNTY, UTAH  
For OLSON & HOGGAN

BOOK 114 PAGE 176  
**WARRANTY DEED**

ALTON DAHLE and IOLA E. DAHLE  
husband and wife

grantor s of Logan City, Cache County, State of Utah, hereby  
CONVEY and WARRANT to

LOGAN CITY CORPORATION,  
a municipal corporation

grantee of Logan, Cache County, State of Utah  
for the sum of \$10.00 and other valuable consideration  
the following described tract of land in Cache County, State of Utah:

Beginning at a point in the center of a running slough and in the East line of Lot 8, Block 27, Plat "E" Logan Farm Survey, South 1° 30' West 2.75 chains of the Northeast corner of said Lot 8; thence South 1° 30' West in the East line of said Lot 8, and in the East line of Lot 1 of said Block 27, 17.25 chains, more or less, to the Southeast corner of said Lot 1; thence North 88° 30' West in the South line of Lot 1, 6 rods; thence North 26 rods; thence West 34 rods; thence North on the West line of the East half of said Lot 1, 14 rods; thence North 88° 30' West in the South line of Lot 8, said Block 27, 5 chains, more or less to the Southwest corner of the East three-fourths of Lot 8; thence North 1° 30' East in said line 2.20 chains, more or less to the center of a running slough; thence up the center of the running slough in a general northeasterly direction to the place of beginning, and being situate in the Southeast quarter of Section 31, and the Southwest quarter of Section 32, Township 12 North, and in the Northwest quarter of Section 5, and in the Northeast quarter of Section 6, Township 11 North, Range 1 East of the Salt Lake Base and Meridian. ✓

5-63-12

WITNESS, the hand s of said grantor s, this 9th day of July, A. D. 19 68.

Signed in the presence of

Helen C. Lamb

Alton Dahle

Iola E. Dahle

STATE OF UTAH

County of Cache ss.

On the 18th day of July  
A. D. 19 68 personally appeared before me

Alton Dahle and Iola E. Dahle,  
husband and wife,

RECORDING DATA

Entry No.

349172

Fee \$ 2.00

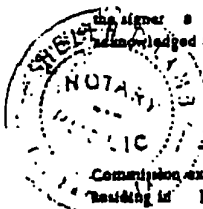
RECORDED ☐ INDEXED ☐

PLATTED ☐ ABSTRACTED ☐

COMPARED ☐ DELIVERED ☐

STATE OF UTAH  
COUNTY OF CACHE ss.  
FILED AND RECORDED FOR  
FICKMAN LAND TITLE CO  
AUG 15 9 22 AM '68

IN BOOK 114 OF RECORD  
PAGE 176  
GRETTA E. SMITH  
COUNTY RECORDER  
DEPUTY



The signer s of the within instrument, who duly  
acknowledged to me that they executed the same.

Helen C. Lamb  
Notary Public  
Commission expires: 5 June 1969  
Residing in Hyde Park, Utah

LAND TITLE COMPANY

BOOK 114 PAGE 176

NT-18555

When recorded mail to:

W. CLYNE LONG

169 E. Center St.  
Logan, Ut. 84321

ENT 604695 Rk 618 Pg 76  
DATE 30-JUN-1994 12:09PM FEE 11.00  
MICHAEL L GLEED, RECORDER - FILED BY CH  
CACHE COUNTY, UTAH  
FOR NORTHERN TITLE COMPANY

## WARRANTY DEED

STEVE LOVELL DAVIS, TRUSTEE,

Grantor(s)

County of CACHE, State of UTAH, hereby Convey and Warrant to

W. CLYNE LONG AND ANN K. LONG,

Grantee(s)

for the sum of TEN DOLLARS AND OTHER GOOD AND VALUABLE CONSIDERATION, the following described tract of land in Cache County, State of Utah:

ALL OF LOT 6 AND ALL OF LOT 7 IN BLOCK 14, PLAT "E" LOGAN FARM SURVEY IN SECTIONS 5 AND 6, TOWNSHIP 11 NORTH, RANGE 1 EAST OF THE SALT LAKE BASE AND MERIDIAN, EXCEPTING THEREFROM, BEGINNING AT THE SOUTHEAST CORNER OF SAID LOT 7, AND RUNNING THENCE NORTH 18 FEET; THENCE WEST 700 FEET; THENCE SOUTH 18 FEET, THENCE EAST 700 FEET, TO THE POINT OF BEGINNING. (02-076-0016)

ALSO, ALL THAT PART OF LOT 1, BLOCK 27, PLAT E, LOGAN WEST FARM SURVEY, LYING SOUTH OF THE SLOUGH. SITUATED IN THE SOUTH HALF OF THE WEST HALF OF SAID LOT 1. CONTAINING 1 ACRE, MORE OR LESS.

-63-13

Subject to easements, restrictions and rights of way of record, and taxes for the year 1994 and thereafter.

Witness, the hand(s) of said Grantor(s), this 29th day of JUNE, 1994.

*Steve Lovell Davis, Trustee*  
STEVE LOVELL DAVIS, TRUSTEE

State of Utah )  
County of Cache )ss:

On the 29th day of JUNE, 1994, personally appeared before me

STEVE LOVELL DAVIS, TRUSTEE

the signers of the within instrument, who duly acknowledged to me that they execute the same.



Notary Public  
BLAKE TORREY  
64 East Center  
Logan, Utah 84321  
My Commission Expires  
March 20, 1997  
State of Utah

NORTHERN TITLE COMPANY

Notary Public

64 EAST CENTER STREET • LOGAN, UTAH 84321 • (801) 752-8600

# WARRANTY DEED

WILLARD K. HILL and MARJORIE N. HILL, husband and wife,

grantors of Logan  
State of Utah, hereby CONVEY and WARRANT to

County of

Cache

THE CITY OF LOGAN, a municipal corporation

grantees of 255 North Main Street, Logan, Utah 84321  
for the sum of \$10.00 and other valuable consideration  
the following described tract of land in Cache County, State of Utah:  
The South half of the West half of Lot 7, Block 27, Plat "E" LOGAN FARM SURVEY, being  
situate in Section 31, Township 12 North, Range 1 East of the Salt Lake Base and Meridian.  
Together with all rights in and to the flowing well on the premises, Permit NO.  
25-6849, and together with all rights in and to any rights of way established  
by easement or by record.

Beginning at the Southeast corner of Lot 4, Block 27, Plat "A" or "E" Logan Farm  
Survey; thence running West 1 rod; thence North 20 rods; thence East 1 rod; thence  
South 20 rods to the place of beginning, and further described as situated in  
Section 31, Township 12 North, Range 1 East of the Salt Lake Base and Meridian.

A right-of-way in common with others over the following:

Beginning one rod West of the Southeast corner of Lot 4, Block 27, Plat "E" LOGAN  
FARM SURVEY, and running thence South 1 rod; thence East 21 rods; thence North 1 rod;  
thence West 21 rods to the place of beginning.

Together with 4 shares of water in the Logan Cow Pasture Irrigation Company.

Also, User's Claim code no. 25, Serial No. 3193, the point of diversion being North  
1230 feet West 4 feet from the Southeast corner of Section 31, Township 12 North,  
Range 1 East of the Salt Lake Base and Meridian, with application filed with the  
State Engineer's office under no. 23586 and Cert. of App. No. 5516.

5-63-14

WITNESS, the hand of said grantors, this 19th day of December A.D. 19 86

Signed in the presence of

Willard K. Hill  
Willard K. Hill

Marjorie N. Hill  
Marjorie N. Hill

STATE OF UTAH

ss.

County of Cache

On the 19th day of December  
A.D. 19 86 personally appeared before me

Willard K. Hill and Marjorie N. Hill,  
husband and wife,

the signers of the within instrument, who duly  
acknowledged to me that they executed the same.

[Signature]  
Notary Public  
Residing in Hyde Park, Utah

## RECORDING DATA

Entry No.

497053

Fee \$ 6.00

RECORDED ☐  
PLATTED ☐  
COMPARED ☐

INDEXED ☐  
ABSTRACTED ☐  
DELIVERED ☐

STATE OF UTAH  
(SS)  
COUNTY OF CACHE  
FILED & RECORDED FOR  
MICHAEL L. GLEED  
Dec 19 4 35 PM '86

MICHAEL L. GLEED  
COUNTY RECORDER  
BY DEPUTY

LAND TITLE COMPANY

BOOK 393 PAGE 52





# Logan City Landfill Daily Operating Record

Page \_\_\_\_ of \_\_\_\_

Tuesday, November 14, 2006

## Load and Quantity Summary

### Class I Landfill (Municipal Solid Waste)

Waste Code	Waste Description	Loads	Tons
AB	ANIMAL BYPRODUCT	3	12.46
CCD	CONTAMINATED C AND D	0	0
COW	COWS THAT BYPRODUCTS BRING IN	0	0
CW	COMMERCIAL WASTE	25	99.98
CWC	COMMERCIAL WASTE(CITY)	17	145.81
CWS	COMMERCIAL WASTE	1	0.33
DAF	DEAD ANIMALS (PER TON)	1	10.56
DAS	DEAD ANIMAL SMALL (NO CHARGE)	3	12.15
HW	HOUSEHOLD WASTE	0	0
HWC	HOUSEHOLD WASTE NO CHARGE	11	86.41
HWS	HOUSEHOLD WASTE	14	4.62
IW1	INFECTIOUS WASTE UNDER 1/2 YAR	0	0
IW2	INFECTIOUS WASTE OVER 1/2 YARD	0	0
Total:		75	372.32

### Class IVb Landfill (Construction and Demolition Waste)

Waste Code	Waste Description	Loads	Tons
CC	COMMUNITY CLEAN UP(PER TON)	0	0
CCS	COMUNITY CLEAN UP	0	0
CD	CONSTRUCTION DEBRIS	39	170.73
CDC	CONSTRUCTION DEBRIS(CITY)	0	0
CDS	CONSTRUCTION DEBRIS	5	1.65
CGW	CONTAMINATED GREENWASTE	0	0
CN	CONCRETE	2	9.54
CNC	CONCRETE(CTIY)	1	1.73
CNS	CONCRETE	0	0
GL	GLASS drop-off Recycling	0	0
GWH	GW HSHLD GARB.**ADD CONTAINER#	3	18.27
SCU	SPRING CLEAN-UP	0	0
ST	STUMPS AND ROOT BALLS	0	0
STC	Stumps and Rootballs from CITY	0	0
Total:		50	201.92

### Cover Material

Waste Code	Waste Description	Loads	Tons
CF	CLEAN FILL	0	0
CM	COVER MATERIAL	5	88.22
CMC	COVER MATERIAL(CITY)	0	0
CMS	COVER MATERIAL	0	0
CS	CONTAMINATED SOIL	0	0
Total:		5	88.22

### Road Building Material

Waste Code	Waste Description	Loads	Tons
AS	ASPHALT	0	0
ASC	ASPHALT(CITY)	0	0
Total:		0	0

### Asbestos Cell

Waste Code	Waste Description	Loads	Tons
AA	ASBESTOS	0	0
Total:		0	0

Tuesday, November 14, 2006

Page \_\_\_\_ of \_\_\_\_

**Load and Quantity Summary - Continued****Green Waste Facility (Receiving)**

Waste Code	Waste Description	Loads	Tons
CBS	GREENWASTE (CURBSIDE PICKUP)	1	2.62
GW	GREENWASTE	13	52.79
gwc	green waste city (ton)	1	2.63
GWF	GREENWASTE FIRE WOOD	0	0
GWS	GREENWASTE	3	0.6
LOG	FIREWOOD DROPPED OFF (PER TON)	0	0
PA	PALLETS	0	0
PAS	PALLETS	0	0
XTC	CHRISTMAS TREES (CITY)	0	0
XTS	CHRISTMAS TREE	0	0
<b>Total:</b>		<b>18</b>	<b>58.64</b>

**Green Waste Facility (Departing)**

Waste Code	Waste Description	Loads	Yards or Cords
CP	COMPOST	0	0
cpc	COMPOST FOR CITY	0	0
CPD	COMPOST, DONATION	0	0
CRD	COARSE CHIP DONATION	0	0
FPL	FINE PALLET CHIPS	0	0
FW	FIREWOOD	0	0
MD	MEDIUM WOOD CHIPS	1	6.22
MDC	MEDIUM WOOD CHIPS FOR CITY	0	0
MDD	MEDIUM WOOD CHIPS, DONATION	0	0
PLD	PALLET CHIPS, DONATION	0	0
PM	PREMIUM (MULCH)	0	0
PMC	PREMIUM MULCH FOR CITY	0	0
PMD	PREMIUM WOOD CHIPS, DONATION	0	0
PP	PALLET PICK-UP	0	0
SHT	COARSE SHREDDED TREES	0	0
XT	CHRISTMAS TREE CHIPS	0	0
<b>Total:</b>		<b>1</b>	<b>6.22</b>

**Notes and/or Deviations Regarding Loads and Quantities**

Please enter any notes or deviations regarding loads or quantities of material brought to the landfill, on this date, here.

Tuesday, November 14, 2006

Page \_\_\_\_ of \_\_\_\_

**Waste Inspections****Class I Landfill (Municipal Solid Waste)**

Number of Inspections Conducted:	5
Percentage of Loads Inspected (Minimum = 1%):	6.7%

* Field Note Reference No.	Problems (Yes/No)	Corrective Actions Taken
6270	No	
6271	Yes	I educated the individual regarding the hazards of disposing paint in the landfill. Paint was taken to Household Hazardous Waste.
6272	No	
6273	No	

**Class IVb Landfill (Construction and Demolition Waste)**

Number of Inspections Conducted:	1
----------------------------------	---

* Field Note Reference No.	Problems (Yes/No)	Corrective Actions Taken
6279	No	

\* Complete Field Inspection Notes can be found on file at the landfill. They can be referenced by the date and the Field Note Reference Number.

Tuesday, November 14, 2006

Page \_\_\_\_ of \_\_\_\_

**Waste Inspections - Continued****Scale House Inspections**

<b>** Number of Inspections Conducted:</b>	12
--	----

\*\* See attached sheet for details regarding scale house inspections

**Cover****Class I Landfill (Municipal Solid Waste)**

Cover Type	Amount	Who Covered
Soil (yds <sup>3</sup> )		
Alternate (yds <sup>3</sup> )		
Spray (bags)		

**Class IVb Landfill (Construction and Demolition Waste)**

Cover Type	Amount	Who Covered
Soil (yds <sup>3</sup> )		

<b>Days since last covering:</b>	1
----------------------------------	---

**Asbestos Cell**

Was asbestos disposed today?	no	(yes/no)
Depth of cover applied to asbestos if disposed today:		(inches)
Was Asbestos Cell Checked for proper cover today?	yes	(yes/no)
Condition:	Good	
Checked by:	Tony Douglas	
Time:	3:00 PM	

**Dust Control**

Were any dust control measures needed today?	no	(yes/no)
If yes, what methods were used?		

**Notes and/or Deviations Regarding Other Daily Landfill Operations**

Please enter any notes or deviations regarding other daily landfill operations, on this date, here.

**Attachments**

Results of other inspections and monitoring required for landfill operation and compliance will be attached after this page. This might include quarterly landfill inspections, air quality monitoring, water quality monitoring, etc.

Tuesday, November 14, 2006

**Summary**

Please enter any other notes or explanations that might be helpful here.

Record Prepared By: \_\_\_\_\_

Signature: \_\_\_\_\_

Environmental Engineer

Signature: \_\_\_\_\_

Landfill Manager

**Logan City Landfill Daily Operating Record**
**Date:** 11/14/2006

**Class I Landfill (Municipal Solid Waste)**

Waste Code	Waste Description	Loads	Tons
AB	ANIMAL BYPRODUCT	3	12.46
CCD	CONTAMINATED C AND D	0	0
COW	COWS THAT BYPRODUCTS BRING IN	0	0
CW	COMMERCIAL WASTE	25	99.98
CWC	COMMERCIAL WASTE(CITY)	17	145.81
CWS	COMMERCIAL WASTE	1	0.33
DAF	DEAD ANIMALS (PER TON)	1	10.56
DAS	DEAD ANIMAL SMALL (NO CHARGE)	3	12.15
HW	HOUSEHOLD WASTE	0	0
HWC	HOUSEHOLD WASTE NO CHARGE	11	86.41
HWS	HOUSEHOLD WASTE	14	4.62
IW1	INFECTIOUS WASTE UNDER 1/2 YAR	0	0
IW2	INFECTIOUS WASTE OVER 1/2 YARD	0	0
<b>Total:</b>		<b>75</b>	<b>372.32</b>

**Class IVb Landfill (Construction and Demolition Waste)**

Waste Code	Waste Description	Loads	Tons
CC	COMMUNITY CLEAN UP(PER TON)	0	0
CCS	COMUNITY CLEAN UP	0	0
CD	CONSTRUCTION DEBRIS	39	170.73
CDC	CONSTRUCTION DEBRIS(CITY)	0	0
CDS	CONSTRUCTION DEBRIS	5	1.65
CGW	CONTAMINATED GREENWASTE	0	0
CN	CONCRETE	2	9.54
CNC	CONCRETE(CITY)	1	1.73
CNS	CONCRETE	0	0
GL	GLASS drop-off Recycling	0	0
GW	GW HSHLD GARB.**ADD CONTAINER#	3	18.27
SCU	SPRING CLEAN-UP	0	0
ST	STUMPS AND ROOT BALLS	0	0
STC	Stumps and Rootballs from CITY	0	0
<b>Total:</b>		<b>50</b>	<b>201.92</b>

**Green Waste Facility (Receiving)**

Waste Code	Waste Description	Loads	Tons
CBS	GREENWASTE (CURBSIDE PICKUP)	1	2.62
GW	GREENWASTE	13	52.79
gwc	green waste city (ton)	1	2.63
GWF	GREENWASTE FIRE WOOD	0	0
GWS	GREENWASTE	3	0.6
LOG	FIREWOOD DROPPED OFF (PER TON)	0	0
PA	PALLETS	0	0
PAS	PALLETS	0	0
XTC	CHRISTMAS TREES (CITY)	0	0
XTS	CHRISTMAS TREE	0	0
<b>Total:</b>		<b>18</b>	<b>58.64</b>

**Green Waste Facility (Departing)**

Waste Code	Waste Description	Loads	Yards or Cords
CP	COMPOST	0	0

cpc	COMPOST FOR CITY	0	0
CPD	COMPOST, DONATION	0	0
CRD	COARSE CHIP DONATION	0	0
FPL	FINE PALLET CHIPS	0	0
FW	FIREWOOD	0	0
MD	MEDIUM WOOD CHIPS	1	6.22
MDC	MEDIUM WOOD CHIPS FOR CITY	0	0
MDD	MEDIUM WOOD CHIPS, DONATION	0	0
PLD	PALLET CHIPS, DONATION	0	0
PM	PREMIUM (MULCH)	0	0
PMC	PREMIUM MULCH FOR CITY	0	0
PMD	PREMIUM WOOD CHIPS, DONATION	0	0
PP	PALLET PICK-UP	0	0
SHT	COARSE SHREDDED TREES	0	0
XT	CHRISTMAS TREE CHIPS	0	0
<b>Total:</b>		<b>1</b>	<b>6.22</b>

#### Cover Material

Waste Code	Waste Description	Loads	Tons
CF	CLEAN FILL	0	0
CM	COVER MATERIAL	5	88.22
CMC	COVER MATERIAL(CITY)	0	0
CMS	COVER MATERIAL	0	0
CS	CONTAMINATED SOIL	0	0
<b>Total:</b>		<b>5</b>	<b>88.22</b>

#### Road Building Material

Waste Code	Waste Description	Loads	Tons
AS	ASPHALT	0	0
ASC	ASPHALT(CITY)	0	0
<b>Total:</b>		<b>0</b>	<b>0</b>

#### Asbestos Cell

Waste Code	Waste Description	Loads	Tons
AA	ASBESTOS	0	0
<b>Total:</b>		<b>0</b>	<b>0</b>

#### Miscellaneous

Waste Code	Waste Description	Loads	Tons
ABC	ALUMINUM CANS	0	0
abs		0	0
ASP		0	0
BA	BATTERIES, RECYCLED	0	0
BOO	BOOTIES	0	0
BT	BIG TRUCK TIRES(20-25) RIM	0	0
cbr	curbside recycle waste	3	13.43
CPW	CARPET PAD WEIGHT ONLY	0	0
HWF	Hazardous Waste Fee	0	0
MP	MISC.PURCHASE/ITEMS FRM FACE	0	0
MPC	MISC.PURCHASE/ CTY EMPLOYEE	0	0
OT	OVERTIME CHARGE	0	0
PT	Propane Bottles/fire Extingish	0	0
RF	REFRIGERATOR	0	0
RI	RIMS (TIRE RIMS)	0	0
RO	ROLL OFF SERVICE \$123.75	0	0

ROF	\$0.00 ROLLOFF NO CHARGE	0	0
ROR	ROLLOFF HOOK FEE RECYCLING	0	0
SHF	SPECIAL HANDLE FEE	0	0
T		0	0
TA1	TARPS 6X8	0	0
TA2	TARPS 8 X 10	0	0
TI	CAR TIRES	0	0
Tlc		0	0
TIW	WEIGHT ONLY TIRE RECYCLING	0	0
TR	TRUCK TIRES	0	0
TRT	TRACTOR TIRE (25+ RIM)	0	0
UTL	UNTARPED LOAD FEE	0	0
WL	WET LOAD	0	0
WO	WEIGH ONLY	0	0
zcp	points for greenwaste	0	0
	<b>Total:</b>	<b>3</b>	<b>13.43</b>

# Material Summary Report

Page -1 of 1

Report Dates From 11/14/2006 To 11/14/2006

P Date 12/7/2006

D  
4/2006

Net Tons

AB	ANIMAL BYPRODUCT	Loads	3	12.46
cbr	curbside recycle waste	Loads	3	13.43
CBS	GREENWASTE (CURBSIDE PICKUP)	Loads	1	2.62
CD	CONSTRUCTION DEBRIS	Loads	39	170.73
CDS	CONSTRUCTION DEBRIS	Loads	5	1.65
CM	COVER MATERIAL	Loads	5	88.22
CN	CONCRETE	Loads	2	9.54
CNC	CONCRETE(CTTY)	Loads	1	1.73
CW	COMMERCIAL WASTE	Loads	25	99.98
CWC	COMMERCIAL WASTE(CITY)	Loads	17	145.81
CWS	COMMERCIAL WASTE	Loads	1	0.33
DAF	DEAD ANIMALS (PER TON)	Loads	1	10.56
DAS	DEAD ANIMAL SMALL (NO CHARGE)	Loads	3	12.15
GW	GREENWASTE	Loads	13	52.79
gwc	green waste city (ton)	Loads	1	2.63
GWH	GW HSHLD GARB.**ADD CONTAINER#	Loads	3	18.27
GWS	GREENWASTE	Loads	3	0.60
HWC	HOUSEHOLD WASTE NO CHARGE	Loads	11	86.41
HWS	HOUSEHOLD WASTE	Loads	14	4.62
MD	MEDIUM WOOD CHIPS	Loads	1	6.22



## Landfill Quarterly Inspection Form

ENVIRONMENTAL DEPARTMENT

### Inspection Checklist continued

#### 7. Buildings (Scalehouse, Oil Collection, Building, Office, Equipment Buildings)

General Operating Conditions:    Poor                      Fair                      Good                      Excellent

Describe problems if any and locations: \_\_\_\_\_

#### 8. Ground Water Monitoring Wells

Check well locks?    GW1 ☐    GW2 ☐    GW3B ☐    GW4 ☐  
                                 GW5 ☐    GW6A ☐    GW9 ☐    GW10 ☐

Soil around well heads stable?    YES                      NO

Describe problems if any and locations: \_\_\_\_\_

#### 9. Compost Operations

Sign conditions:                      Poor                      Fair                      Good                      Excellent

Litter conditions:                      Poor                      Fair                      Good                      Excellent

Work zone barricading:                      Poor                      Fair                      Good                      Excellent

Describe problems if any and locations: \_\_\_\_\_

#### 10. Tipping Face

Daily cover type: \_\_\_\_\_                      Depth of daily cover: \_\_\_\_\_

Traffic Control:                      Poor                      Fair                      Good                      Excellent

Litter fence condition:                      Poor                      Fair                      Good                      Excellent

Blowing litter condition:                      Poor                      Fair                      Good                      Excellent

Describe problems if any and locations: \_\_\_\_\_

#### 11. Disease vectors:

Seagull population:                      Same                      Increased                      Decreased

Rock Chuck population:                      Same                      Increased                      Decreased

#### 12. Overview:

General litter conditions:    Poor                      Fair                      Good                      Excellent

General landfill condition:    Poor                      Fair                      Good                      Excellent

Describe problems if any and locations: \_\_\_\_\_

Inspectors signature \_\_\_\_\_ Date \_\_\_\_\_



# Logan City Landfill Class IVb

## C&D Landfill Quarterly Inspection

Record ID \_\_\_\_\_

### ENVIRONMENTAL DEPARTMENT

Inspector: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Quarter: \_\_\_\_\_

#### Inspection Checklist

Dust Control: Poor Fair Good Excellent

Describe problems if any and locations: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Litter Control: Poor Fair Good Excellent

Describe problems if any and locations: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Cover Material Condition: Poor Fair Good Excellent

Depth of cover material \_\_\_\_\_

Describe problems if any and locations: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Waste Control: Poor Fair Good Excellent

Unacceptable waste: YES NO

Type of unacceptable waste: \_\_\_\_\_

Describe problems if any and locations: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Inspector's signature \_\_\_\_\_ Date \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Inspected By: \_\_\_\_\_ Vehicle License #: \_\_\_\_\_

VEHICLE TYPE	Load Description	Waste Description		
Pickup <input type="checkbox"/>	Household Waste <input type="checkbox"/>	Anti-Freeze <input type="checkbox"/>	Infectious Waste <input type="checkbox"/>	Other Hazardous Waste _____ _____ _____ _____ _____
Pickup w/ Trailer <input type="checkbox"/>	Commercial Waste <input type="checkbox"/>	Batteries <input type="checkbox"/>	Pesticides <input type="checkbox"/>	
Dump Truck <input type="checkbox"/>	Compostable Material <input type="checkbox"/>	PCB's <input type="checkbox"/>	Propane Tanks <input type="checkbox"/>	
1 Ton Truck <input type="checkbox"/>	Recyclable Material <input type="checkbox"/>	Motor Oil <input type="checkbox"/>	Refrigeration Units <input type="checkbox"/>	
Farm Truck <input type="checkbox"/>	Construction Debris <input type="checkbox"/>	Paint <input type="checkbox"/>	Tires <input type="checkbox"/>	
Other _____				

1

Inspector Informed Of Waste: Dan Barnes ☐ Tony Douglass ☐ Other ☐

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Inspected By: \_\_\_\_\_ Vehicle License #: \_\_\_\_\_

VEHICLE TYPE	Load Description	Waste Description		
Pickup <input type="checkbox"/>	Household Waste <input type="checkbox"/>	Anti-Freeze <input type="checkbox"/>	Infectious Waste <input type="checkbox"/>	Other Hazardous Waste _____ _____ _____ _____ _____
Pickup w/ Trailer <input type="checkbox"/>	Commercial Waste <input type="checkbox"/>	Batteries <input type="checkbox"/>	Pesticides <input type="checkbox"/>	
Dump Truck <input type="checkbox"/>	Compostable Material <input type="checkbox"/>	PCB's <input type="checkbox"/>	Propane Tanks <input type="checkbox"/>	
1 Ton Truck <input type="checkbox"/>	Recyclable Material <input type="checkbox"/>	Motor Oil <input type="checkbox"/>	Refrigeration Units <input type="checkbox"/>	
Farm Truck <input type="checkbox"/>	Construction Debris <input type="checkbox"/>	Paint <input type="checkbox"/>	Tires <input type="checkbox"/>	
Other _____				

2

Inspector Informed Of Waste: Dan Barnes ☐ Tony Douglass ☐ Other ☐

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Inspected By: \_\_\_\_\_ Vehicle License #: \_\_\_\_\_

VEHICLE TYPE	Load Description	Waste Description		
Pickup <input type="checkbox"/>	Household Waste <input type="checkbox"/>	Anti-Freeze <input type="checkbox"/>	Infectious Waste <input type="checkbox"/>	Other Hazardous Waste _____ _____ _____ _____ _____
Pickup w/ Trailer <input type="checkbox"/>	Commercial Waste <input type="checkbox"/>	Batteries <input type="checkbox"/>	Pesticides <input type="checkbox"/>	
Dump Truck <input type="checkbox"/>	Compostable Material <input type="checkbox"/>	PCB's <input type="checkbox"/>	Propane Tanks <input type="checkbox"/>	
1 Ton Truck <input type="checkbox"/>	Recyclable Material <input type="checkbox"/>	Motor Oil <input type="checkbox"/>	Refrigeration Units <input type="checkbox"/>	
Farm Truck <input type="checkbox"/>	Construction Debris <input type="checkbox"/>	Paint <input type="checkbox"/>	Tires <input type="checkbox"/>	
Other _____				

3

Inspector Informed Of Waste: Dan Barnes ☐ Tony Douglass ☐ Other ☐

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Inspected By: \_\_\_\_\_ Vehicle License #: \_\_\_\_\_

VEHICLE TYPE	Load Description	Waste Description		
Pickup <input type="checkbox"/>	Household Waste <input type="checkbox"/>	Anti-Freeze <input type="checkbox"/>	Infectious Waste <input type="checkbox"/>	Other Hazardous Waste _____ _____ _____ _____ _____
Pickup w/ Trailer <input type="checkbox"/>	Commercial Waste <input type="checkbox"/>	Batteries <input type="checkbox"/>	Pesticides <input type="checkbox"/>	
Dump Truck <input type="checkbox"/>	Compostable Material <input type="checkbox"/>	PCB's <input type="checkbox"/>	Propane Tanks <input type="checkbox"/>	
1 Ton Truck <input type="checkbox"/>	Recyclable Material <input type="checkbox"/>	Motor Oil <input type="checkbox"/>	Refrigeration Units <input type="checkbox"/>	
Farm Truck <input type="checkbox"/>	Construction Debris <input type="checkbox"/>	Paint <input type="checkbox"/>	Tires <input type="checkbox"/>	
Other _____				

4

Inspector Informed Of Waste: Dan Barnes ☐ Tony Douglass ☐ Other ☐

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Inspected By: \_\_\_\_\_ Vehicle License #: \_\_\_\_\_

VEHICLE TYPE	Load Description	Waste Description		
Pickup <input type="checkbox"/>	Household Waste <input type="checkbox"/>	Anti-Freeze <input type="checkbox"/>	Infectious Waste <input type="checkbox"/>	Other Hazardous Waste _____ _____ _____ _____ _____
Pickup w/ Trailer <input type="checkbox"/>	Commercial Waste <input type="checkbox"/>	Batteries <input type="checkbox"/>	Pesticides <input type="checkbox"/>	
Dump Truck <input type="checkbox"/>	Compostable Material <input type="checkbox"/>	PCB's <input type="checkbox"/>	Propane Tanks <input type="checkbox"/>	
1 Ton Truck <input type="checkbox"/>	Recyclable Material <input type="checkbox"/>	Motor Oil <input type="checkbox"/>	Refrigeration Units <input type="checkbox"/>	
Farm Truck <input type="checkbox"/>	Construction Debris <input type="checkbox"/>	Paint <input type="checkbox"/>	Tires <input type="checkbox"/>	
Other _____				

5

Inspector Informed Of Waste: Dan Barnes ☐ Tony Douglass ☐ Other ☐

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Inspected By: \_\_\_\_\_ Vehicle License #: \_\_\_\_\_

VEHICLE TYPE	Load Description	Waste Description		
Pickup <input type="checkbox"/>	Household Waste <input type="checkbox"/>	Anti-Freeze <input type="checkbox"/>	Infectious Waste <input type="checkbox"/>	Other Hazardous Waste _____ _____ _____ _____ _____
Pickup w/ Trailer <input type="checkbox"/>	Commercial Waste <input type="checkbox"/>	Batteries <input type="checkbox"/>	Pesticides <input type="checkbox"/>	
Dump Truck <input type="checkbox"/>	Compostable Material <input type="checkbox"/>	PCB's <input type="checkbox"/>	Propane Tanks <input type="checkbox"/>	
1 Ton Truck <input type="checkbox"/>	Recyclable Material <input type="checkbox"/>	Motor Oil <input type="checkbox"/>	Refrigeration Units <input type="checkbox"/>	
Farm Truck <input type="checkbox"/>	Construction Debris <input type="checkbox"/>	Paint <input type="checkbox"/>	Tires <input type="checkbox"/>	
Other _____				

6

Inspector Informed Of Waste: Dan Barnes ☐ Tony Douglass ☐ Other ☐

# Logan City Landfill Vehicle Inspection Form

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Inspected By: \_\_\_\_\_ Vehicle License #: \_\_\_\_\_

VEHICLE TYPE	Load Description	Waste Description		
Pickup <input type="checkbox"/>	Household Waste <input type="checkbox"/>	Anti-Freeze <input type="checkbox"/>	Infectious Waste <input type="checkbox"/>	Other Hazardous Waste <input type="checkbox"/>
Pickup w/ Trailer <input type="checkbox"/>	Commercial Waste <input type="checkbox"/>	Batteries <input type="checkbox"/>	Pesticides <input type="checkbox"/>	<input type="checkbox"/>
Dump Truck <input type="checkbox"/>	Compostable Material <input type="checkbox"/>	PCB's <input type="checkbox"/>	Propane Tanks <input type="checkbox"/>	<input type="checkbox"/>
1 Ton Truck <input type="checkbox"/>	Recyclable Material <input type="checkbox"/>	Motor Oil <input type="checkbox"/>	Refrigeration Units <input type="checkbox"/>	<input type="checkbox"/>
Farm Truck <input type="checkbox"/>	Construction Debris <input type="checkbox"/>	Paint <input type="checkbox"/>	Tires <input type="checkbox"/>	<input type="checkbox"/>
Other <input type="checkbox"/>				<input type="checkbox"/>

Inspector Informed Of Waste: Dan Barnes ☐ Tony Douglass ☐ Other ☐ 7

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Inspected By: \_\_\_\_\_ Vehicle License #: \_\_\_\_\_

VEHICLE TYPE	Load Description	Waste Description		
Pickup <input type="checkbox"/>	Household Waste <input type="checkbox"/>	Anti-Freeze <input type="checkbox"/>	Infectious Waste <input type="checkbox"/>	Other Hazardous Waste <input type="checkbox"/>
Pickup w/ Trailer <input type="checkbox"/>	Commercial Waste <input type="checkbox"/>	Batteries <input type="checkbox"/>	Pesticides <input type="checkbox"/>	<input type="checkbox"/>
Dump Truck <input type="checkbox"/>	Compostable Material <input type="checkbox"/>	PCB's <input type="checkbox"/>	Propane Tanks <input type="checkbox"/>	<input type="checkbox"/>
1 Ton Truck <input type="checkbox"/>	Recyclable Material <input type="checkbox"/>	Motor Oil <input type="checkbox"/>	Refrigeration Units <input type="checkbox"/>	<input type="checkbox"/>
Farm Truck <input type="checkbox"/>	Construction Debris <input type="checkbox"/>	Paint <input type="checkbox"/>	Tires <input type="checkbox"/>	<input type="checkbox"/>
Other <input type="checkbox"/>				<input type="checkbox"/>

Inspector Informed Of Waste: Dan Barnes ☐ Tony Douglass ☐ Other ☐ 8

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Inspected By: \_\_\_\_\_ Vehicle License #: \_\_\_\_\_

VEHICLE TYPE	Load Description	Waste Description		
Pickup <input type="checkbox"/>	Household Waste <input type="checkbox"/>	Anti-Freeze <input type="checkbox"/>	Infectious Waste <input type="checkbox"/>	Other Hazardous Waste <input type="checkbox"/>
Pickup w/ Trailer <input type="checkbox"/>	Commercial Waste <input type="checkbox"/>	Batteries <input type="checkbox"/>	Pesticides <input type="checkbox"/>	<input type="checkbox"/>
Dump Truck <input type="checkbox"/>	Compostable Material <input type="checkbox"/>	PCB's <input type="checkbox"/>	Propane Tanks <input type="checkbox"/>	<input type="checkbox"/>
1 Ton Truck <input type="checkbox"/>	Recyclable Material <input type="checkbox"/>	Motor Oil <input type="checkbox"/>	Refrigeration Units <input type="checkbox"/>	<input type="checkbox"/>
Farm Truck <input type="checkbox"/>	Construction Debris <input type="checkbox"/>	Paint <input type="checkbox"/>	Tires <input type="checkbox"/>	<input type="checkbox"/>
Other <input type="checkbox"/>				<input type="checkbox"/>

Inspector Informed Of Waste: Dan Barnes ☐ Tony Douglass ☐ Other ☐ 9

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Inspected By: \_\_\_\_\_ Vehicle License #: \_\_\_\_\_

VEHICLE TYPE	Load Description	Waste Description		
Pickup <input type="checkbox"/>	Household Waste <input type="checkbox"/>	Anti-Freeze <input type="checkbox"/>	Infectious Waste <input type="checkbox"/>	Other Hazardous Waste <input type="checkbox"/>
Pickup w/ Trailer <input type="checkbox"/>	Commercial Waste <input type="checkbox"/>	Batteries <input type="checkbox"/>	Pesticides <input type="checkbox"/>	<input type="checkbox"/>
Dump Truck <input type="checkbox"/>	Compostable Material <input type="checkbox"/>	PCB's <input type="checkbox"/>	Propane Tanks <input type="checkbox"/>	<input type="checkbox"/>
1 Ton Truck <input type="checkbox"/>	Recyclable Material <input type="checkbox"/>	Motor Oil <input type="checkbox"/>	Refrigeration Units <input type="checkbox"/>	<input type="checkbox"/>
Farm Truck <input type="checkbox"/>	Construction Debris <input type="checkbox"/>	Paint <input type="checkbox"/>	Tires <input type="checkbox"/>	<input type="checkbox"/>
Other <input type="checkbox"/>				<input type="checkbox"/>

Inspector Informed Of Waste: Dan Barnes ☐ Tony Douglass ☐ Other ☐ 10

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Inspected By: \_\_\_\_\_ Vehicle License #: \_\_\_\_\_

VEHICLE TYPE	Load Description	Waste Description		
Pickup <input type="checkbox"/>	Household Waste <input type="checkbox"/>	Anti-Freeze <input type="checkbox"/>	Infectious Waste <input type="checkbox"/>	Other Hazardous Waste <input type="checkbox"/>
Pickup w/ Trailer <input type="checkbox"/>	Commercial Waste <input type="checkbox"/>	Batteries <input type="checkbox"/>	Pesticides <input type="checkbox"/>	<input type="checkbox"/>
Dump Truck <input type="checkbox"/>	Compostable Material <input type="checkbox"/>	PCB's <input type="checkbox"/>	Propane Tanks <input type="checkbox"/>	<input type="checkbox"/>
1 Ton Truck <input type="checkbox"/>	Recyclable Material <input type="checkbox"/>	Motor Oil <input type="checkbox"/>	Refrigeration Units <input type="checkbox"/>	<input type="checkbox"/>
Farm Truck <input type="checkbox"/>	Construction Debris <input type="checkbox"/>	Paint <input type="checkbox"/>	Tires <input type="checkbox"/>	<input type="checkbox"/>
Other <input type="checkbox"/>				<input type="checkbox"/>

Inspector Informed Of Waste: Dan Barnes ☐ Tony Douglass ☐ Other ☐ 11

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Inspected By: \_\_\_\_\_ Vehicle License #: \_\_\_\_\_

VEHICLE TYPE	Load Description	Waste Description		
Pickup <input type="checkbox"/>	Household Waste <input type="checkbox"/>	Anti-Freeze <input type="checkbox"/>	Infectious Waste <input type="checkbox"/>	Other Hazardous Waste <input type="checkbox"/>
Pickup w/ Trailer <input type="checkbox"/>	Commercial Waste <input type="checkbox"/>	Batteries <input type="checkbox"/>	Pesticides <input type="checkbox"/>	<input type="checkbox"/>
Dump Truck <input type="checkbox"/>	Compostable Material <input type="checkbox"/>	PCB's <input type="checkbox"/>	Propane Tanks <input type="checkbox"/>	<input type="checkbox"/>
1 Ton Truck <input type="checkbox"/>	Recyclable Material <input type="checkbox"/>	Motor Oil <input type="checkbox"/>	Refrigeration Units <input type="checkbox"/>	<input type="checkbox"/>
Farm Truck <input type="checkbox"/>	Construction Debris <input type="checkbox"/>	Paint <input type="checkbox"/>	Tires <input type="checkbox"/>	<input type="checkbox"/>
Other <input type="checkbox"/>				<input type="checkbox"/>

Inspector Informed Of Waste: Dan Barnes ☐ Tony Douglass ☐ Other ☐ 12

**Landfill Inspection**

Field Notes

No. 8271

Random ☐ Non-Random ☐ Suspect ☐ Repeat Offender ☐Facet ☐ C&D ☐ Green Waste ☐ Recycling ☐ Transfer Station ☐

Date \_\_\_\_\_ Time \_\_\_\_\_ : \_\_\_\_\_ AM / PM

Lic.# \_\_\_\_\_ State \_\_\_\_\_

Vehicle Description \_\_\_\_\_ Trailer Type \_\_\_\_\_

Gross \_\_\_\_\_ Tare \_\_\_\_\_ Net \_\_\_\_\_

Owner \_\_\_\_\_ Phone (\_\_\_\_\_) \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_ Zip \_\_\_\_\_

Waste Generator \_\_\_\_\_ Job Location \_\_\_\_\_

**Waste Type**Household ☐ Commercial ☐ Industrial ☐ C&D ☐Educational ☐ Government ☐ Other \_\_\_\_\_

Driver's Name \_\_\_\_\_

**Waste Composition**Cardboard ☐ Plastic ☐ Metal ☐ Paper ☐ Wood ☐

Other \_\_\_\_\_ Notes \_\_\_\_\_

**Household Hazardous Waste**

Characteristic	Description	Quantity	Units
Corrosive	_____	_____	_____
Flammable	_____	_____	_____
Reactive	_____	_____	_____
Toxic	_____	_____	_____
Other	_____	_____	_____
Notes	_____		

**Special / Restricted Wastes**Asbestos ☐ Animals ☐ Ash ☐ Auto ☐ C&D ☐Cont. Soil ☐ Medical ☐ White Goods ☐ Ref. Units ☐ Tires ☐

Other \_\_\_\_\_

Notes \_\_\_\_\_

### **Suspicious Waste**

#### **Reason for Suspicion**

Sealed Container ☒ Unknown Chemical ☐ Unknown Liquid ☐  
Radioactive ☐ Gas Cylinder ☐ Possible PCB ☐  
Commercial Placards ☐ Type \_\_\_\_\_

Other Reasons \_\_\_\_\_

Field Tests \_\_\_\_\_

Tested By \_\_\_\_\_

Test Results \_\_\_\_\_

Follow up Action / Disposal Method \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### **Regulated Waste**

What part of the load? Front ☐ Middle ☐ Back ☐

Photo's taken? ☐ By \_\_\_\_\_

Was Generator/ Hauler notified? Yes ☐ No ☐

Was State Regulating Agency notified? Yes ☐ No ☐

Regulator \_\_\_\_\_ Date \_\_\_\_\_

Instructions given by Regulator \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Notes / Follow up \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### **Driver's Description of Load**

\_\_\_\_\_

\_\_\_\_\_

Driver's Signature \_\_\_\_\_

Was Load Accepted Yes ☐ No ☐

Supervisor's Signature \_\_\_\_\_

# LANDFILL

## Daily Cash Reconciliation & Revenue Receipt

DATE: \_\_\_\_\_

DOCUMENT NUMBER

NAME: \_\_\_\_\_

FROM: \_\_\_\_\_

TO: \_\_\_\_\_

COIN:

Pennies	
Nickels	
Dimes	
Quarters	
Half Dollars	
Dollar Coin	
<b>TOTAL:</b>	<b>\$</b>

### ITEMIZED DEPOSIT AMOUNTS

C&D	\$	
COMP	\$	
FACE	\$	
RECY	\$	
OTHER	\$	
<b>TOTAL:</b>	<b>\$</b>	

CURRENCY:

\$1.00	
\$2.00	
\$5.00	
\$10.00	
\$20.00	
\$50.00	
\$100.00	
<b>TOTAL:</b>	<b>\$</b>

TOTALS:

Total Currency	\$	
Total Coin	\$	
Total Checks	\$	
<b>Total Bank Deposit</b>	<b>\$</b>	(Equals Money Bag)
Total Credit Cards	\$	
<b>Total Daily Deposit</b>	<b>\$</b>	(Includes Credit Cards & Bank Deposit)
<b>Report Total</b>	<b>\$</b>	(Itemized Deposit Total)
Over/Short	\$	

Treasurer's Initials: \_\_\_\_\_

Date: \_\_\_\_\_

# Employee Cash/ Shift Transfer

Shift 1

Name \_\_\_\_\_

Co-Worker \_\_\_\_\_

Ending Cash

Time Out: \_\_\_\_\_

Transaction Number Out: \_\_\_\_\_

Starting Cash

Time In: \_\_\_\_\_

Transaction Number In: \_\_\_\_\_

Closing Cash

(Ending Cash - Starting Cash)

1st Cash Report Amount

Difference

Make Sure you attach the Cash Report

SIGNATURE \_\_\_\_\_

Shift 2

Name \_\_\_\_\_

Co-Worker \_\_\_\_\_

Ending Cash

Time Out: \_\_\_\_\_

Transaction Number Out: \_\_\_\_\_

Starting Cash

Time In: \_\_\_\_\_

Transaction Number In: \_\_\_\_\_

Closing Cash

(Ending Cash - Starting Cash)

2nd Cash Report Amount

Difference

( 2nd cache amount - 1st cash amount )

Make Sure you attach the Cash Report

SIGNATURE \_\_\_\_\_

Shift 3

Name \_\_\_\_\_

Co-Worker \_\_\_\_\_

Ending Cash

Time Out: \_\_\_\_\_

Transaction Number Out: \_\_\_\_\_

Starting Cash

Time In: \_\_\_\_\_

Transaction Number In: \_\_\_\_\_

Closing Cash

(Ending Cash - Starting Cash)

Final Cash Report Amount

Difference

( Final cash amount - 2nd cash amount -1st cash amount )

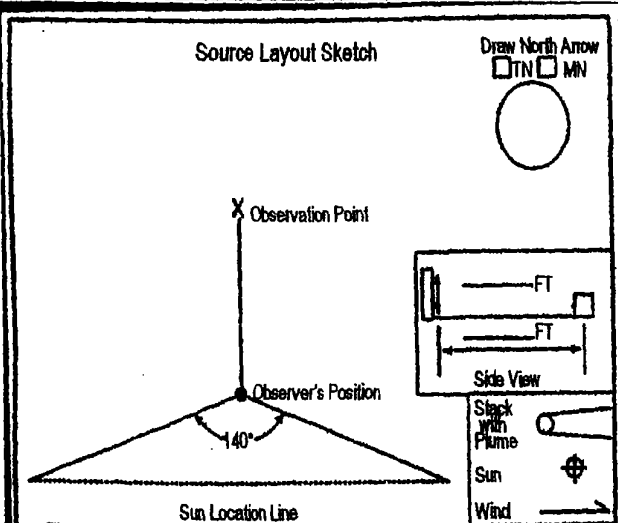
Make Sure you attach the Cash Report

SIGNATURE \_\_\_\_\_

**EPA METHOD 9 (40 CFR 60 - Appendix A)  
VISIBLE EMISSION OBSERVATION FORM**

**MINIMUM OF  
24 OBSERVATION**

COMPANY NAME <i>Logan City Environmental Department</i>			
LOCATION <i>Logan City Landfill</i>			
LOCATION			
CITY <i>Logan</i>	STATE <i>Utah</i>	ZIP <i>84321</i>	
PROCESS EQUIPMENT		OPERATING MODE	
CONTROL EQUIPMENT		OPERATING MODE	
DESCRIBE EMISSION POINT			
HEIGHT OF EMISSION POINT		HEIGHT OF EMISSION POINT RELATIVE TO OBSERVER	
		START                  END	
DISTANCE TO EMISSION POINT		DIRECTION TO EMISSION PT. (DEGREES 0-360))	
START                  END		START                  END	
VERTICAL ANGLE TO OBSERVATION POINT		DIRECTION TO OBSERVATION POINT (DEGREES (0-360))	
START                  END		START                  END	
DISTANCE & DIRECTION TO OBSERVATION POINT FROM EMISSION POINT			
START    END			
DESCRIBE EMISSIONS			
START    END			
EMISSION COLOR		WATER DROPLET PLUME	
START                  END		ATTACHED <input type="checkbox"/> DETACHED <input type="checkbox"/> NONE <input type="checkbox"/>	
DESCRIBE PLUME BACKGROUND			
START    END			
BACKGROUND COLOR		SKY CONDITIONS	
START                  END		START                  END	
WIND SPEED		WIND DIRECTION	
START                  END		START                  END	
AMBIENT TEMP		WET BULB TEMP      RH percent	
START                  END			



OBSERVATION DATE		START TIME			END TIME

MIN	SEC				COMMENTS
	0	15	30	45	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

OBSERVER'S NAME (PRINT)	
OBSERVER'S SIGNATURE	DATE
ORGANIZATION	
CERTIFIED BY	DATE

ADDITIONAL INFORMATION

## Logan City Landfill Opacity Readings

Quarter : \_\_\_\_\_

Year : \_\_\_\_\_

Date : \_\_\_\_\_

Time : \_\_\_\_\_

Location	Dust (Yes/No)	% Opacity (within 24 hours of initial survey)
Road to Class I Face		
Class I Working Face		
Road To C&D		
C&D Working Face		
Class I to C&D Connector Road		
South Gate Road		
Green Waste Load/Unload Area		
Green Waste Windrow Area		
Green Waste Grinder		
Green Waste Screener		
Green Waste Compost Turner		
West Wetlands Road		
Landfill Paved Roads		
Above Ground Diesel Fuel Tank		
Used Oil Tank Behind Landfill 2		
Used Oil Tanks @ Oil Collection Center (2 Tanks)		
Used Oil Space Heater		
Asbestos Cell		

Site Conditions and Comments (Weather Conditions, etc) :

Inspector (print) : \_\_\_\_\_

Signature : \_\_\_\_\_



Runoff Curve Number and Runoff

Project:	Locan Landfill	By:	JAH	Date:	7/12/2007
Location:	Logan, Cache County, Utah	Checked:	BDM	Date:	7/16/2007
Condition:	Developed	Comments:	Drainage Area 1 (Final cover on C&D, below access road)		

1. Runoff Curve Number

Soil Name and Hydrologic Soil Group	Cover Description	CN			Area (acres)	CNxArea
		Table 2-2	Table 2-3	Table 2-4		
C-day loam or shallow s	36" native soil cover, prior to veg establishment	85			23.97	2037.45
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
TOTALS:					23.97	2037.45
CN Weighted: $\frac{\Sigma(CNxArea)}{\Sigma(Area)} = \frac{2037.45}{23.97} = 85$ Use CN						85

2. Runoff

		Storm #1		Storm #2		Storm #3	
		ARI (Year)	Duration	ARI (Year)	Duration	ARI (Year)	Duration
		25	24-hr				
Reinfall, P	in	2.41					
S	in	1.7647059					
I <sub>a</sub>	in	0.3629412					
Runoff (Q)	in	1.1072087					

Time of Concentration ( $T_c$ ) or Travel Time ( $T_t$ )

Project:	Locan Landfill	By:	JAH	Date:	7/12/2007
Location:	Logan, Cache County, Utah	Checked:	BDM	Date:	7/16/2007
Condition:	Existing	Comments:	Drainage Area 1 (Final cover on C&D, below access road)		

Sheet Flow

- 1 Surface Description (Table 3-1)
- 2 Manning's Roughness Coefficient,  $n$  (Table 3-1)
- 3 Flow Length,  $L$  (Total  $L \leq 300$  ft)
- 4 2-year, 24-hr Rainfall,  $P_2$
- 5 Land Slope
- 6  $T_t$

Segment ID	A	
	Residue cover <20%	
	0.06	
ft	278	
in	1.46	
ft/ft	0.21	
hr	0.1027521	0.1027521

Shallow Concentrated Flow

- 7 Surface Description
- 8 Flow Length,  $L$
- 9 Land Slope
- 10 Average Velocity,  $V$  (figure 3-1)
- 11  $T_t$

Segment ID	b	
	Unpaved	
ft	0.5	
ft/ft	0.005	
	1.2	
hr	0.0001157	0.0001157

Channel Flow

- Flow Depth
- Channel Side Slopes
- 12 Cross Section flow area,  $a$
- 13 Wetted Perimeter,  $P_w$
- 14 Hydraulic Radius,  $r$
- 15 Channel Slope,  $s$
- Channel Material
- Degree of Irregularity
- Relative effect of Obstruction
- Vegetation
- Degree of Meandering
- 16 Manning's Roughness Coefficient,  $n$
- 17 Velocity,  $V$
- 18 Flow Length,  $L$
- 19  $T_t$
- 20 Watershed or Subarea  $T_c$

Segment ID	C	
	2.0442	
7h:1V	2	
ft <sup>2</sup>	8.3575073	
ft	7.0813165	
ft	1.1802194	
ft/ft	0.005	
Earth	0.02	
Moderate	0.01	
Minor	0.013	
Low	0.0075	
Minor	1	
	0.0505	
ft/sec	2.3299954	
ft	2213	
hr	0.2638298	0.2638298
	hr	0.3666976

Graphical Peak Discharge Method

Project:	Locan Landfill	By:	JAH	Date:	7/12/2007
Location:	Logan, Cache County, Utah	Checked:	BDM	Date:	7/16/2007
Condition:	Existing	Comments:	Drainage Area 1 (Final cover on C&D, below access road)		

1 Data

Drainage Area, $A_m$	$mi^2$	0.037453125
Runoff curve number	CN	85
$T_c$	hr	0.366697647
Rainfall Distribution		II
Pond or Swamp Areas	% of $A_m$	1.0

2 Frequency

Duration

3 Rainfall,  $P$

4 Initial Abstraction,  $I_a$

5 Compute  $I_a/P$

$T_c$

6 Unit peak discharge,  $q_u$

7 Runoff,  $Q$

8 Pond and Swamp Factor,  $F_p$

9 Peak Discharge

yr

in

in

hr

csn/in

in

$ft^3/sec$

Storm #1	Storm #2	Storm #3
25		
24-hr		
2.41		
0.352941		
0.146449		
0.366698		
540		
1.107209		
0.87		
19.48187		

Runoff Curve Number and Runoff

Project:	Locan Landfill	By:	JAH	Date:	7/12/2007
Location:	Logan, Cache County, Utah	Checked:	BDM	Date:	7/16/2007
Condition:	Developed	Comments:	Drainage Area 2 (Final cover)		

1. Runoff Curve Number

Soil Name and Hydrologic Soil Group	Cover Description	CN			Area (acres)	CNxArea
		Table 2-2	Table 2-3	Table 2-4		
C-day loam or shallow s	36" native soil cover, prior to veg establishment	85			15.07	1280.95
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
TOTALS:					15.07	1280.95

CN Weighted:  $\frac{\sum(CN \times Area)}{\sum(Area)} = \frac{1280.95}{15.07} = 85$  Use CN **85**

2. Runoff

		Storm #1		Storm #2		Storm #3	
		ARI (Year)	Duration	ARI (Year)	Duration	ARI (Year)	Duration
		25	24-hr				
Rainfall, P	in	2.41					
S	in	1.7647059					
I <sub>a</sub>	in	0.3529412					
Runoff (Q)	in	1.1072087					

Time of Concentration ( $T_c$ ) or Travel Time ( $T_t$ )

Project:	Locan Landfill	By:	JAH	Date:	7/12/2007
Location:	Logan, Cache County, Utah	Checked:	BDM	Date:	7/16/2007
Condition:	Existing	Comments:	Drainage Area 2 (Final cover)		

Sheet Flow

- 1 Surface Description (Table 3-1)
- 2 Manning's Roughness Coefficient,  $n$  (Table 3-1)
- 3 Flow Length,  $L$  (Total  $L \leq 300$  ft)
- 4 2-year, 24-hr Rainfall,  $P_2$
- 5 Land Slope
- 6  $T_t$

Segment ID	A	
	Residue cover <20%	
	0.06	
ft	300	
in	1.46	
ft/ft	0.2	
hr	0.1113596	0.1113596

Shallow Concentrated Flow

- 7 Surface Description
- 8 Flow Length,  $L$
- 9 Land Slope
- 10 Average Velocity,  $V$  (figure 3-1)
- 11  $T_t$

Segment ID	B	
	Unpaved	
ft	70	
ft/ft	0.14	
	6	
hr	0.0032407	0.0032407

Channel Flow

- Flow Depth
- Channel Side Slopes
- 12 Cross Section flow area,  $a$
- 13 Wetted Perimeter,  $P_w$
- 14 Hydraulic Radius,  $r$
- 15 Channel Slope,  $s$
- Channel Material
- Degree of Irregularity
- Relative effect of Obstruction
- Vegetation
- Degree of Meandering
- 16 Manning's Roughness Coefficient,  $n$
- 17 Velocity,  $V$
- 18 Flow Length,  $L$
- 19  $T_t$
- 20 Watershed or Subarea  $T_c$

Segment ID	C	
	1.14	
$7h:1V$	4	
ft <sup>2</sup>	5.1984	
ft	5.098235	
ft	1.019647	
ft/ft	0.01	
Earth	0.02	
Minor	0.005	
Negligible	0	
Medium	0.018	
Appreciable	1.15	
	0.04945	
ft/sec	3.0524826	
ft	328	
hr	0.0298482	0.0298482
	hr	0.1444485

Graphical Peak Discharge Method

Project:	Locan Landfill	By:	JAH	Date:	7/12/2007
Location:	Logan, Cache County, Utah	Checked:	BDM	Date:	7/16/2007
Condition:	Existing	Comments:	Drainage Area 2 (Final cover)		

1

Data

Drainage Area, Am	mi <sup>2</sup>	0.023546875
Runoff curve number	CN	85
T <sub>c</sub>	hr	0.144448529
Rainfall Distribution		II
Pond or Swamp Areas	% of Am	5.0

2

Frequency

yr

Duration

3 Rainfall, P

in

4 Initial Abstraction, I<sub>a</sub>

in

5 Compute I<sub>a</sub>/P

T<sub>c</sub>

hr

6 Unit peak discharge, q<sub>u</sub>

csm/in

7 Runoff, Q

in

8 Pond and Swamp Factor, F<sub>p</sub>

9 Peak Discharge

ft<sup>3</sup>/sec

Storm #1	Storm #2	Storm #3
25		
24-hr		
2.41		
0.352941		
0.146449		
0.144449		
825		
1.107209		
0.72		
15.48635		

Runoff Curve Number and Runoff

Project:	Locan Landfill	By:	JAH	Date:	7/12/2007
Location:	Logan, Cache County, Utah	Checked:	BDM	Date:	7/16/2007
Condition:	Developed	Comments:	Drainage Area 3 (Final cover, sizing channel along uphill side of access rd)		

1. Runoff Curve Number

Soil Name and Hydrologic Soil Group	Cover Description	CN			Area (acres)	CNxArea
		Table 2-2	Table 2-3	Table 2-4		
C-clay loam or shallow s	36" native soil cover, prior to veg establishment	85			25.83	2195.55
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
TOTALS:					25.83	2195.55

CN Weighted:  $\frac{\sum(CN \times Area)}{\sum(Area)} = \frac{2195.55}{25.83} = 85$  Use CN **85**

2. Runoff

		Storm #1		Storm #2		Storm #3	
		ARI (Year)	Duration	ARI (Year)	Duration	ARI (Year)	Duration
		25	24-hr				
Rainfall, P	in	2.41					
S	in	1.7647059					
I <sub>a</sub>	in	0.3529412					
Runoff (Q)	in	1.1072087					

Time of Concentration ( $T_c$ ) or Travel Time ( $T_t$ )

Project:	Locan Landfill	By:	JAH	Date:	7/12/2007
Location:	Logan, Cache County, Utah	Checked:	BDM	Date:	7/16/2007
Condition:	Existing	Comments:	Drainage Area 3 (Final cover, sizing channel along uphill side of access ro		

Sheet Flow

- 1 Surface Description (Table 3-1)
- 2 Manning's Roughness Coefficient,  $n$  (Table 3-1)
- 3 Flow Length,  $L$  (Total  $L \leq 300$  ft)
- 4 2-year, 24-hr Rainfall,  $P_2$
- 5 Land Slope
- 6  $T_t$

Segment ID	A	
	Residue cover <20%	
	0.06	
ft	300	
in	1.46	
ft/ft	0.18	
hr	0.116153	0.116153

Shallow Concentrated Flow

- 7 Surface Description
- 8 Flow Length,  $L$
- 9 Land Slope
- 10 Average Velocity,  $V$  (figure 3-1)
- 11  $T_t$

Segment ID	B	
	Unpaved	
ft	60	
ft/ft	0.17	
	1.2	
hr	0.0138889	0.0138889

Channel Flow

- Flow Depth
- Channel Side Slopes
- 12 Cross Section flow area,  $a$
- 13 Wetted Perimeter,  $P_w$
- 14 Hydraulic Radius,  $r$
- 15 Channel Slope,  $s$
- Channel Material
- Degree of Irregularity
- Relative effect of Obstruction
- Vegetation
- Degree of Meandering
- 16 Manning's Roughness Coefficient,  $n$
- 17 Velocity,  $V$
- 18 Flow Length,  $L$
- 19  $T_t$
- 20 Watershed or Subarea  $T_c$

Segment ID	C	
	1.705	
7h:1V	2	
ft <sup>2</sup>	5.81405	
ft	5.9062933	
ft	0.9843822	
ft/ft	0.0397	
Earth	0.02	
Moderate	0.01	
Minor	0.013	
Low	0.0075	
Appreciable	1.15	
	0.058075	
ft/sec	5.058652	
ft	2870	
hr	0.1575958	0.1575958
	hr	0.2876377

Graphical Peak Discharge Method

Project:	Locan Landfill	By:	JAH	Date:	7/12/2007
Location:	Logan, Cache County, Utah	Checked:	BDM	Date:	7/16/2007
Condition:	Existing	Comments:	Drainage Area 3 (Final cover, sizing channel along uphill side of access road)		

1 Data

Drainage Area, Am	mi <sup>2</sup>	0.040359375
Runoff curve number	CN	85
T <sub>c</sub>	hr	0.287637719
Rainfall Distribution		II
Pond or Swamp Areas	% of Am	0.0

2 Frequency

Duration

3 Rainfall, P

4 Initial Abstraction, I<sub>a</sub>

5 Compute I<sub>a</sub>/P

T<sub>c</sub>

6 Unit peak discharge, q<sub>u</sub>

7 Runoff, Q

8 Pond and Swamp Factor, F<sub>p</sub>

9 Peak Discharge

yr

in

in

hr

csm/in

in

ft<sup>3</sup>/sec

Storm #1	Storm #2	Storm #3
25		
24-hr		
2.41		
0.352941		
0.146449		
0.287638		
660		
1.107209		
1		
29.49292		

Runoff Curve Number and Runoff

Project:	Locan Landfill	By:	JAH	Date:	7/12/2007
Location:	Logan, Cache County, Utah	Checked:	BDM	Date:	7/16/2007
Condition:	Developed	Comments:	Drainage Area 4 (Final cover, sizing channel along uphill side of access road)		

1. Runoff Curve Number

Soil Name and Hydrologic Soil Group	Cover Description	CN			Area (acres)	CNxArea
		Table 2-2	Table 2-3	Table 2-4		
C-day loam or shallow s	36" native soil cover, prior to veg establishment	85			17.73	1507.05
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
TOTALS:					17.73	1507.05
CN Weighted: $\frac{\sum(CN \times Area)}{\sum(Area)} = \frac{1507.05}{17.73} = 85$ Use CN						85

2. Runoff

		Storm #1		Storm #2		Storm #3	
		ARI (Year)	Duration	ARI (Year)	Duration	ARI (Year)	Duration
		25	24-hr				
Rainfall, P	in	2.41					
S	in	1.7647059					
I <sub>a</sub>	in	0.3529412					
Runoff (Q)	in	1.1072087					

Time of Concentration ( $T_c$ ) or Travel Time ( $T_t$ )

Project:	Locan Landfill	By:	JAH	Date:	7/12/2007
Location:	Logan, Cache County, Utah	Checked:	BDM	Date:	7/16/2007
Condition:	Existing	Comments:	Drainage Area 4 (Final cover, sizing channel along uphill side of access rd)		

### Sheet Flow

- 1 Surface Description (Table 3-1)
- 2 Manning's Roughness Coefficient,  $n$  (Table 3-1)
- 3 Flow Length,  $L$  (Total  $L \leq 300$  ft)
- 4 2-year, 24-hr Rainfall,  $P_2$
- 5 Land Slope
- 6  $T_t$

Segment ID	A	
	Residue cover <20%	
	0.06	
ft	300	
in	1.46	
ft/ft	0.25	
hr	0.1018506	0.1018506

### Shallow Concentrated Flow

- 7 Surface Description
- 8 Flow Length,  $L$
- 9 Land Slope
- 10 Average Velocity,  $V$  (figure 3-1)
- 11  $T_t$

Segment ID	B	
	Unpaved	
ft	108	
ft/ft	0.25	
	1.2	
hr	0.025	0.025

### Channel Flow

- Flow Depth
- Channel Side Slopes
- 12 Cross Section flow area,  $a$
- 13 Wetted Perimeter,  $P_w$
- 14 Hydraulic Radius,  $r$
- 15 Channel Slope,  $s$
- Channel Material
- Degree of Irregularity
- Relative effect of Obstruction
- Vegetation
- Degree of Meandering
- 16 Manning's Roughness Coefficient,  $n$
- 17 Velocity,  $V$
- 18 Flow Length,  $L$
- 19  $T_t$
- 20 Watershed or Subarea  $T_c$

Segment ID	C	
	1.442	
7h:1V	2	
ft <sup>2</sup>	4.158728	
ft	4.9952345	
ft	0.8325391	
ft/ft	0.0594	
Earth	0.02	
Moderate	0.01	
Minor	0.013	
Low	0.0075	
Appreciable	1.15	
	0.058075	
ft/sec	5.5338412	
ft	1481	
hr	0.0743406	0.0743406
	hr	0.2011912

Graphical Peak Discharge Method

Project:	Locan Landfill	By:	JAH	Date:	7/12/2007
Location:	Logan, Cache County, Utah	Checked:	BDM	Date:	7/16/2007
Condition:	Existing	Comments:	Drainage Area 4 (Final cover, sizing channel along uphill side of access road)		

1 Data

Drainage Area, Am	mi <sup>2</sup>	0.027703125
Runoff curve number	CN	85
T <sub>c</sub>	hr	0.201191171
Rainfall Distribution		II
Pond or Swamp Areas	% of Am	0.0

2 Frequency

Duration

3 Rainfall, P

4 Initial Abstraction, I<sub>a</sub>

5 Compute I<sub>a</sub>/P

T<sub>c</sub>

6 Unit peak discharge, q<sub>u</sub>

7 Runoff, Q

8 Pond and Swamp Factor, F<sub>p</sub>

9 Peak Discharge

yr

in

in

hr

csm/in

in

ft<sup>3</sup>/sec

Storm #1	Storm #2	Storm #3
25		
24-hr		
2.41		
0.352941		
0.146449		
0.201191		
750		
1.107209		
1		
23.00486		

Runoff Curve Number and Runoff

Project:	Locan Landfill	By:	JAH	Date:	7/12/2007
Location:	Logan, Cache County, Utah	Checked:	BDM	Date:	7/16/2007
Condition:	Developed	Comments:	Drainage Area 3, 4 & 5 (Final cover, all three areas route to SW corner)		

1. Runoff Curve Number

Soil Name and Hydrologic Soil Group	Cover Description	CN			Area (acres)	CNxArea
		Table 2-2	Table 2-3	Table 2-4		
C-clay loam or shallow s	36" native soil cover, prior to veg establishment	85			58.86	5003.1
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
TOTALS:					58.86	5003.1
CN Weighted: $\frac{\sum(CN \times Area)}{\sum(Area)} = \frac{5003.1}{58.86} = 85$					Use CN	85

2. Runoff

		Storm #1		Storm #2		Storm #3	
		ARI (Year)	Duration	ARI (Year)	Duration	ARI (Year)	Duration
		25	24-hr				
Rainfall, P	in	2.41					
S	in	1.7647059					
I <sub>a</sub>	in	0.3529412					
Runoff (Q)	in	1.1072087					

Time of Concentration( $T_c$ ) or Travel Time ( $T_t$ )

Project:	Locan Landfill	By:	JAH	Date:	7/12/2007
Location:	Logan, Cache County, Utah	Checked:	BDM	Date:	7/16/2007
Condition:	Existing	Comments:	Drainage Area 3,4 & 5 (Final cover, all three areas route to SW corner)		

Sheet Flow

- 1 Surface Description (Table 3-1)
- 2 Manning's Roughness Coefficient,  $n$  (Table 3-1)
- 3 Flow Length,  $L$  (Total  $L \leq 300$  ft)
- 4 2-year, 24-hr Rainfall,  $P_2$
- 5 Land Slope
- 6  $T_t$

Segment ID	A	
	Residue cover <20%	
	0.06	
ft	300	
in	1.46	
ft/ft	0.18	
hr	0.116153	0.116153

Shallow Concentrated Flow

- 7 Surface Description
- 8 Flow Length,  $L$
- 9 Land Slope
- 10 Average Velocity,  $V$  (figure 3-1)
- 11  $T_t$

Segment ID	B	
	Unpaved	
ft	60	
ft/ft	0.17	
	1.2	
hr	0.0138889	0.0138889

Channel Flow

- Flow Depth
- Channel Side Slopes
- 12 Cross Section flow area,  $a$
- 13 Wetted Perimeter,  $P_w$
- 14 Hydraulic Radius,  $r$
- 15 Channel Slope,  $s$
- Channel Material
- Degree of Irregularity
- Relative effect of Obstruction
- Vegetation
- Degree of Meandering
- 16 Manning's Roughness Coefficient,  $n$
- 17 Velocity,  $V$
- 18 Flow Length,  $L$
- 19  $T_t$
- 20 Watershed or Subarea  $T_c$

Segment ID	C	
	2.212	
7h:1V	2	
ft <sup>2</sup>	9.785888	
ft	7.6625928	
ft	1.2770968	
ft/ft	0.015	
Earth	0.02	
Moderate	0.01	
Minor	0.013	
Low	0.0075	
Appreciable	1.15	
	0.058075	
ft/sec	3.6987843	
ft	6035	
hr	0.453227	0.453227
	hr	0.5832689

Graphical Peak Discharge Method

Project:	Locan Landfill	By:	JAH	Date:	7/12/2007
Location:	Logan, Cache County, Utah	Checked:	BDM	Date:	7/16/2007
Condition:	Existing	Comments:	Drainage Area 3,4 & 5 (Final cover, all three areas route to SW corner)		

1 Data

Drainage Area, $A_m$	$mi^2$	0.09196875
Runoff curve number	CN	85
$T_c$	hr	0.583268927
Rainfall Distribution		II
Pond or Swamp Areas	% of $A_m$	3.0

2 Frequency

Duration

3 Rainfall,  $P$

4 Initial Abstraction,  $I_a$

5 Compute  $I_a/P$

$T_c$

6 Unit peak discharge,  $q_u$

7 Runoff,  $Q$

8 Pond and Swamp Factor,  $F_p$

9 Peak Discharge

yr

in

in

hr

csn/in

in

$ft^3/sec$

Storm #1	Storm #2	Storm #3
25		
24-hr		
2.41		
0.352941		
0.148449		
0.583269		
475		
1.107209		
0.75		
36.27644		





State of Utah

Department of  
Environmental Quality

Dianne R. Nielson, Ph.D.  
*Executive Director*

DIVISION OF WATER QUALITY  
Walter L. Baker, P.E.  
*Director*

Water Quality Board  
Ray M. Child, *Chair*  
Douglas B. Thompson, *Vice-Chair*  
Paula Doughty  
David F. Echols  
Neil K. Kochenour  
Darrell H. Mensel  
Dianne R. Nielson  
Jay Ivan Olsen  
Joe Piccolo  
Gregory L. Rowley  
Ronald C. Sims  
Walter L. Baker,  
*Executive Secretary*

JON M. HUNTSMAN, JR.  
*Governor*

GARY HERBERT  
*Lieutenant Governor*

June 6, 2005

Mr. Issa A. Hamud  
Environmental Director  
City of Logan  
450 N. 1000 W.  
Logan, Utah 84321

Dear Mr. Hamud:

Subject: Utah Pollutant Discharge Elimination System (UPDES)  
Multi-Sector General Permit for Storm Water Discharges Associated with Industrial  
Activity, Coverage No. UTR000703.

Our office received your "notice of intent" (NOI) for Logan City Landfill to obtain coverage under the UPDES Multi-Sector General Permit for Storm Water Discharges Associated with Industrial Activity, General Permit No. UTR000000 on June 02, 2005. The received NOI is for the Logan City Landfill facility located at, Approx. 100 North 1000 West, Logan City, Utah, Cache County. This letter confirms your coverage under the general permit; the permit coverage number for the facility is No. UTR000703. Please use this number in any future correspondence associated with this project.

This coverage is effective June 02, 2005 and expires at midnight, December 31, 2007.

The permit requires a Storm Water Pollution Prevention Plan (SWP3). Maintaining a current copy of the SWP3 at the site is a requirement of the permit. Monitoring is also required as outlined in appendix II requirements. Please review these requirements if you are not familiar with them. A copy of the general permit and appendix requirements can be found on our website at <http://www.waterquality.utah.gov/updes/stormwater.htm>.

Storm water discharge monitoring report (SWDMR) forms are enclosed for your convenience. These forms may be used to record visual and/or analytical monitoring results.

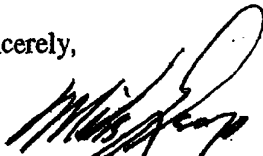
As the agency charged with the administration of issuing UPDES Permits, we are continuously looking for ways to improve our quality of service to you. Please take

Page 2

a few moments to complete the enclosed questionnaire, and return it in the enclosed, self-addressed, postage paid, envelope. The results will be used to improve our quality and responsiveness and give us feedback on customer satisfaction.

If you have any questions concerning this letter or your permit coverage please do not hesitate to contact me by phone at (801) 538-9325 or by e-mail at [mmgeorge@utah.gov](mailto:mmgeorge@utah.gov). Thank you.

Sincerely,



Mike George, Environmental Scientist  
Permits & Compliance Section

Enclosure

U:\WQ\PERMITS\Mgeorge\wp\storm water\group 5\logancitylandfill.doc

## STORM WATER DISCHARGE MONITORING REPORT (SWDMR)

(For additional forms copy this form or contact the DWQ)

### IDENTIFICATION & LOCATION

Name \_\_\_\_\_

Permit No. UTR \_\_\_\_\_

Mailing Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Location (if different) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Monitoring Period:

From: Month \_\_\_\_\_ Day \_\_\_\_\_ Year \_\_\_\_\_

To: Month \_\_\_\_\_ Day \_\_\_\_\_ Year \_\_\_\_\_

Total Storm Water Discharge Points \_\_\_\_\_

Number assigned to this Discharge Point \_\_\_\_\_

### INDUSTRY SECTOR(S)

Industrial Activities or Industry Sector(s) Drained by this Discharge:

- |   |   |
|---|---|
| <input type="checkbox"/> A. Timber Products Facilities  | <input type="checkbox"/> R. Ship or Boat Building and Repair Yards.   |
| <input type="checkbox"/> B. Paper and Allied Products Manufacturing Facilities.   | <input type="checkbox"/> S. Vehicle Maintenance Areas, Equipment Cleaning Areas or Airport Deicing Operations located at Air Transportation Facilities. |
| <input type="checkbox"/> C. Chemical and Allied Products Manufacturing Facilities.  | <input type="checkbox"/> T. Wastewater Treatment Works.   |
| <input type="checkbox"/> D. Asphalt Paving, Roofing Materials, and Lubricant Manufacturing Facilities.  | <input type="checkbox"/> U. Food and Kindred Products Facilities.   |
| <input type="checkbox"/> E. Glass, Clay, Cement, Concrete, and Gypsum Product Manufacturing Facilities.   | <input type="checkbox"/> V. Textile Mills, Apparel and other Fabric Product Manufacturing Facilities.   |
| <input type="checkbox"/> F. Primary Metals Facilities.  | <input type="checkbox"/> W. Furniture and Fixture Manufacturing Facilities.   |
| <input type="checkbox"/> G. Metal Mines (Ore Mining and Dressing).  | <input type="checkbox"/> X. Printing and Publishing Facilities.   |
| <input type="checkbox"/> H. Coal Mines and Coal Mine-Related Facilities.  | <input type="checkbox"/> Y. Rubber and Miscellaneous Plastic Product Manufacturing Facilities.  |
| <input type="checkbox"/> I. Oil or Gas Extraction Facilities.   | <input type="checkbox"/> Z. Leather Tanning and Finishing Facilities.   |
| <input type="checkbox"/> J. Mineral Mining and Processing Facilities.   | <input type="checkbox"/> AA. Facilities That Manufacture Metal Products including Jewelry, Silverware and Plated Ware.                                  |
| <input type="checkbox"/> K. Hazardous Waste Treatment Storage or Disposal Facilities.   | <input type="checkbox"/> AB. Facilities That Manufacture Transportation Equipment, Industrial or Commercial Machinery.                                  |
| <input type="checkbox"/> L. Landfills and Land Application Sites.   | <input type="checkbox"/> AC. Facilities That Manufacture Electronic and Electrical Equipment and Components, Photographic and Optical Goods.            |
| <input type="checkbox"/> M. Automobile Salvage Yards.   | <input type="checkbox"/> AD. Non-Classified Facilities.   |
| <input type="checkbox"/> N. Scrap Recycling and Waste Recycling Facilities.   |   |
| <input type="checkbox"/> O. Steam Electric Power Generating Facilities.   |   |
| <input type="checkbox"/> P. Motor Freight Transportation Facilities, Passenger Transportation Facilities, Petroleum Bulk Oil Stations and Terminals, the United States Postal Service, or Railroad Transportation Facilities. |   |
| <input type="checkbox"/> Q. Vehicle Maintenance Areas and Equipment Cleaning Areas of Water Transportation Facilities.  |   |

## ANALYTICAL MONITORING DATA (For sectors where it is required)

**Storm Event:**

*All samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. This data must be submitted to the Division of Water Quality.*

Date of Storm Event	Month	Day	Year
Duration of Storm Event	Hours		
Rain Fall Measurement	Inches		
Time Elapsed Between Recorded & Previous Storm Event	Days		
Estimated Total Volume of Discharge (Include units: gal., ft <sup>3</sup> , etc.)			
Please check if there has been no discharge of Storm Water during this reporting period. (If none please explain in comment section)		<input type="checkbox"/> No Discharge	

**Sample Type:**

Data shall be reported for a grab sample taken during the first thirty minutes of the discharge. If the collection of a grab sample during the first thirty minutes is impracticable, a grab sample can be taken during the first hour of the discharge, and the discharger shall submit with the monitoring report a description of why a grab sample during the first thirty minutes was impracticable.

[illegible]

**SIGNATURE**

*Name/Title Principle Executive Officer*  
(Typed or Printed)

*I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (penalties under these statutes may include fines up to \$10,000 and or maximum imprisonment of between 6 months and 5 years.)*

*Signature of Principle Executive  
Officer or Authorized Agent*

*Date*

*Comments:*

## INFORMATION

**Adverse Weather Waiver.** When a discharger is unable to collect samples within a specified sampling period due to adverse climatic conditions, the discharger shall collect a substitute sample from a separate qualifying event in the next period and submit the data along with data for the routine sample in that period. Adverse weather conditions that may prohibit the collection of samples include weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricanes, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (drought, extended frozen conditions, etc.).

**Exemption to Monitoring Requirements.** (Does not apply to sector S or any Visual Monitoring Requirements.) As an alternative to monitoring an outfall, an annual certification may be made that material handling equipment or activities; raw or waste materials; intermediate, final, or by-products; industrial machinery or operations; and significant materials from past industrial activity that are located in areas of the facility within the drainage area of the outfall are not presently exposed to storm water and will not be exposed to storm water for the certification period. Such certification must be retained in the storm water pollution prevention plan, and submitted to the DWQ in accordance with Part V.B of the permit. In the case of certifying that a pollutant is not present, the permittee must submit the certification along with the monitoring reports required under reporting requirements in the sector. If the permittee cannot certify for an entire period, they must submit the date exposure was eliminated and any monitoring required up until that date. This certification option is not applicable to compliance monitoring requirements associated with effluent limitations.

**When to Monitor and Report.** Samples must be collected and analyzed at least once during each three month monitoring period. Monitoring results must be submitted annually. See Reporting for dates.

**More Frequent Monitoring.** If sampling is conducted more frequently than semi-annually, all sampling results must be submitted. A separate SWDMR is required for each storm event sampled.

**How to Report.** A separate SWDMR form is required for each storm event and for each outfall sampled. SWDMRs must be signed and mailed to the Division of Water Quality, and must be postmarked by the date specified under Monitoring Periods and Reporting Deadlines. The permittee should retain a copy. The address and phone number for questions or to mail the SWDMR is:

Department of Environmental Quality  
Division of Water Quality  
Attention Storm Water Coordinator  
PO Box 144870  
Salt Lake City, UT 84114-4870

(801) 538-6146

**Substantially Identical Discharges.** If there is reason to believe that the discharges from two or more outfalls are substantially identical, one of the outfalls may be monitored and that data submitted for all substantially identical outfalls. A description of the location of the outfalls, an explanation of why the outfalls have substantially identical discharges, and the size of the drainage area and runoff coefficient must be submitted as an attachment to the SWDMR.

## VISUAL MONITORING REQUIREMENTS

**Sample and Data Collection:** Examinations shall be made of samples collected within the first 30 minutes (or as soon thereafter as practical, but not to exceed one hour) of when the runoff or snowmelt begins discharging. The examinations shall document observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution. The examination must be conducted in a well lit area. No analytical tests are required to be performed on the samples. All such samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. Where practicable the same individual will carry out the collection and examination of discharges for the life of the permit.

### COLOR (Circle the ones that apply):

#### 1. Identification of Color.

Black    Dark Grey    Medium Grey    Light Grey    Dark Chocolate Brown    Medium Brown  
Light Brown    Tan    Yellow    Green    Other \_\_\_\_\_

#### 2. Intensity of Color.    Very intense Prominent    Moderately Perceptible    Hardly Perceptible

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### CLARITY (Circle the right one):

Totally Opaque    Slightly Translucent    Translucent    Nearly Transparent    Transparent

### ODOR (Circle the ones that apply):

Diesel    Gasoline    Petroleum    Solvent    Musty    Sewage    Chlorine  
Rotten Egg    Sulfur    No Odor    Noxious Other \_\_\_\_\_

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## SOLIDS

Floating Solids: (Description) \_\_\_\_\_

Suspended and Settled Solids: (Description) \_\_\_\_\_

FOAM, OIL SHEEN, OR OTHER OBVIOUS INDICATORS OF POLLUTION

## STATE OF UTAH, DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER QUALITY

288 North 1460 West, P.O. Box 144870, Salt Lake City, Utah 84114-4870 (801)538-6146

**NOI**

Notice of Intent (NOI) for Coverage Under the UPDES General Multi-Sector Storm Water Permit for Discharges Associated with Industrial Activity, Permit No. UTR000000.

INSTRUCTIONS ON BACK PAGE

Submission of this Notice of Intent constitutes notice that the party identified in Section I of this form intends to be authorized by a UPDES permit issued for storm water discharges associated with industrial activity in the State of Utah. Becoming a permittee obligates such discharger to comply with the terms and conditions of the permit. ALL NECESSARY INFORMATION MUST BE PROVIDED ON THIS FORM. A different NOI form is provided for construction activities disturbing over 5 acres.

**I. FACILITY OPERATOR INFORMATION**Name: City Of LoganPhone: (435)716-9753Address: 450 N. 1000 W.Status of Owner/Operator: PublicCity: LoganState: UtahZip: 84321Facility Contact Person: Issa A. HamudPhone: (435) 716-9752Facility Contact Person Title: Environmental Director**II. FACILITY SITE/LOCATION INFORMATION**Name: Logan City Landfill

Is the facility located  
on Indian Lands?  
**NO**

Address: Approx. 100 N. 1400 W.County: CacheCity: LoganState: UtahZip: 84321Latitude: 41°43'54" Longitude: 111°53'06" Quarter: SE1/4, SW1/4 Section: Sec31, Sec32 Township: T12N Range: R1NSite Contact Person: Issa A. HamudPhone: (435) 716-9752Site Contact Person Title: Environmental Director**III. SITE ACTIVITY INFORMATION**

Name of Municipality which Operates the Storm Sewer System:

Receiving Water Body: Drainage ditch on south side of landfill running parallel to 200 S.Eventual receiving water is the Logan River.

Is there existing quantitative storm water discharge data?

Yes

☐

No

☒

Is the facility required to do analytical monitoring? (See permit conditions Part V. and Sector monitoring requirements.)

☐☒

Is the facility required to do visual monitoring? (See permit conditions near the end of applicable Sector(s); Appendix A to AD)

☐☒

Is the facility required to submit monitoring data or retain it on site?

(Submit)

☐

(Retain on site)

☒

Is This a New Facility, or is it an Existing Facility?

(New)

☐

(Existing)

☒

If This is an Existing Facility, and the Start-up Date was After Oct. 1992, Please Fill in the Start-up Month: Month (Jan, Feb., etc.): \_\_\_\_\_ Year: \_\_\_\_\_

EPC or Designated Activity Code: Primary: 4953 2nd: \_\_\_\_\_ 3rd: \_\_\_\_\_ 4th: \_\_\_\_\_Do you Have Other Existing UPDES Permits, Enter Permit #s: None

**IV. SECTOR IDENTIFICATION:** The General Multi-Sector Permit covers all industrial activity that is required by law to be covered by a storm water permit. On the following pages the sectors are listed with a description of the industrial activity that is covered by that sector. Please check each sector that covers industrial activities which occur at your site. The sector covered in Appendix AD is the catch-all sector and should only be used if positively no other sector covers your industrial activity. If you should select AD, please call the Storm Water Coordinator at DWQ to discuss the need for choosing Sector AD (Non-Classified Facilities).

☐ **A. Timber Products Facilities** – establishments [generally classified under Standard Industrial Classification (SIC) Major Group 24] that are engaged in cutting timber and pulpwood, merchant sawmills, lath mills, shingle mills, cooperage stock mills, planing mills, and plywood and veneer mills engaged in producing lumber and wood basic materials; and establishments engaged in wood preserving or in manufacturing finished articles made entirely of wood or related materials, except for wood kitchen cabinet manufacturers (SIC Code 2434), which are addressed under sector W.

☐ **B. Paper and Allied Products Manufacturing Facilities** – facilities engaged in the manufacture of pulps from wood and other cellulose fibers and from rags; the manufacture of paper and paperboard into converted products, such as paper coated off the paper machine, paper bags, paper boxes and envelopes; and establishments primarily engaged in manufacturing bags of plastic film and sheet. These facilities are commonly identified by Standard Industrial Classification (SIC) Major Group 26.

☐ **C. Chemical and Allied Products Manufacturing Facilities** – 1) Basic industrial inorganic chemicals (including SIC 281), 2) Plastic materials and synthetic resins, synthetic rubbers, and cellulosic and other humanmade fibers, except glass (including SIC 282), 3) Soap and other detergents and in producing glycerin from vegetable and animal fats and oils; specialty cleaning, polishing, and sanitation preparations; surface active preparations used as emulsifiers, wetting agents, and finishing agents, including sulfonated oils; and perfumes, cosmetics, and other toilet preparations (including SIC 284), 4) Paints (in paste and ready-mixed form); varnishes; lacquers; enamels and shellac; putties, wood fillers, and sealers; paint and varnish removers; paint brush cleaners; and allied paint products (including SIC 285), 5) Industrial organic chemicals (including SIC 286), 6) Nitrogenous and phosphatic basic fertilizers, mixed fertilizer, pesticides, and other agricultural chemicals (including SIC 287), 7) Industrial and household adhesives, glues, caulking compounds, sealants, and linoleum, tile, and rubber cements from vegetable, animal, or synthetic plastics materials; explosives; printing ink, including gravure ink, screen process ink, and lithographic; miscellaneous chemical preparations, such as fatty acids, essential oils, gelatin (except vegetable), sizes, bluing, laundry soaps, writing and stamp pad ink, industrial compounds, such as boiler and heat insulating compounds, metal, oil, and water treatment compounds, waterproofing compounds, and chemical supplies for foundries (including facilities with SIC 289), 8) Ink and paints, including china painting enamels, india ink, drawing ink, platinum paints for burnt wood or leather work, paints for china painting, artists' paints and artists' water colors (SIC 3952, limited to those listed; for others see sector Y.), 9) Medicinal chemicals and pharmaceutical products, including the grading grinding and milling of botanicals (including SIC 283).

☐ **D. Asphalt Paving, Roofing Materials, and Lubricant Manufacturing Facilities** – 1) facilities engaged in manufacturing asphalt paving and roofing materials, including those facilities commonly identified by Standard Industrial Classification (SIC) codes 2951 and 2952, 2) portable asphalt plant facilities (also commonly identified by SIC code 2951), 3) facilities engaged in manufacturing lubricating oils and greases, including those facilities classified as SIC code 2992. Not covered are: 1) petroleum refining facilities, including those that manufacture asphalt or asphalt products and that are classified as SIC code 2911 (see sector I.), 2) oil recycling facilities (see sector N.), and 3) fats and oils rendering (see sector U.).

☐ **E. Glass, Clay, Cement, Concrete, and Gypsum Product Manufacturing Facilities** – manufacturing flat, pressed, or blown glass or glass containers; manufacturing hydraulic cement; manufacturing clay products including tile and brick; manufacturing of pottery and porcelain electrical supplies; manufacturing concrete products; manufacturing gypsum products; nonclay refractories; and grinding or otherwise treating minerals and earths. This section generally includes the following types of manufacturing operations: flat glass, (SIC code 3211); glass containers, (SIC code 3221); pressed and blown glass, not elsewhere classified, (SIC code 3229); glass products made of purchased glass (SIC code 3231) where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water; hydraulic cement, (SIC code 3241); brick and structural clay tile, (SIC code 3251); ceramic wall and floor tile, (SIC code 3253); clay refractories, (SIC code 3255); structural clay products not elsewhere classified (SIC code 3259); vitreous china plumbing fixtures, and china and earthen ware fittings and bathroom accessories (SIC code 3261); vitreous china table and kitchen articles (SIC code 3262); fine earthenware table and kitchen articles (SIC code 3263); porcelain electrical supplies, (SIC code 3264); pottery products, (SIC code 3269); concrete block and brick, (SIC code 3271); concrete products, except block and brick (SIC code 3272); ready-mix concrete, (SIC code 3273); lime (SIC code 3274); gypsum products, (SIC code 3275); cut stone and stone products (SIC code 3281); abrasive products (SIC code 3291); asbestos products (SIC code 3292); minerals and earths, ground or otherwise treated, (SIC code 3295); mineral wool (SIC code 3296); nonclay refractories, (SIC code 3297); and nonmetallic mineral products not elsewhere classified (SIC code 3299).

☐ **F. Primary Metals Facilities** – coking operations, sintering plants, blast furnaces, smelting operations, rolling mills, casting operations, heat treating, extruding, drawing, or forging of all types of ferrous and nonferrous metals, scrap, and ore. Coverage includes the following types of facilities: 1) Steel works, blast furnaces, and rolling and finishing mills including: steel wiredrawing and steel nails and spikes; cold-rolled steel sheet, strip, and bars; and steel pipes and tubes (SIC code 331), 2) Iron and steel foundries, including: gray and ductile iron, malleable iron, steel investment, and steel foundries not elsewhere classified (SIC code 332), 3) Primary smelting and refining of nonferrous metals, including: primary smelting and refining of copper, and primary production of aluminum (SIC code 333), 4)

Secondary smelting and refining of nonferrous metals (SIC code 334), 5) Rolling, drawing, and extruding of nonferrous metals, including: rolling, drawing, and extruding of copper; rolling, drawing, and extruding of nonferrous metals, except copper and aluminum; and drawing and insulating of nonferrous wire (SIC code 335), 6) Nonferrous foundries (castings), including: aluminum die-castings, nonferrous die-castings, except aluminum, aluminum foundries, copper foundries, and nonferrous foundries, except copper and aluminum (SIC code 336), 7) Miscellaneous primary metal products, not elsewhere classified, including: metal heat treating, and primary metal products, not elsewhere classified (SIC code 339).

☐ **G. Metal Mines (Ore Mining and Dressing)** – active and inactive metal mining and ore dressing facilities [Standard Industrial Classification (SIC) Major Group 10] if the storm water has come into contact with, or is contaminated by, any overburden, raw material, intermediate product, finished product, byproduct, or waste product located on the site of the operation. SIC Major Group 10 includes establishments primarily engaged in mining, developing mines, or exploring for metallic minerals (ores) and also includes all ore dressing and beneficiating operations, whether performed at mills operated in conjunction with the mines served or at mills, such as custom mills, operated separately. For the purposes of this part of the permit, the term "metal mining" includes all ore mining and/or dressing and beneficiating operations, whether performed at mills operated in conjunction with the mines served or at mills, such as custom mills, operated separately. All storm water discharges from inactive metal mining facilities and the storm water discharges from the following areas of active, and temporarily inactive, metal mining facilities are the only discharges covered by this section of the permit: topsoil piles; offsite haul/access roads if off active area; onsite haul roads if not constructed of waste rock or if spent ore and mine water is not used for dust control; runoff from tailings dams/dikes when not constructed of waste rock/tailings and no process fluids are present; concentration building, if no contact with material piles; mill site, if no contact with material piles; chemical storage area; docking facility, if no excessive contact with waste product; explosive storage; reclaimed areas released from reclamation bonds prior to December 17, 1990; and partially/inadequately reclaimed areas or areas not released from reclamation bonds. Not covered are: 1) active metal mining facilities that are subject to the effluent limitation guidelines for the Ore Mining and Dressing Point Source Category (40 CFR Part 440). Coverage under this permit does not include adit drainage or contaminated springs or seeps at active facilities, temporarily inactive facilities, or inactive facilities. Also see permit conditions, Limitations on Coverage, *Part I.B.3*. 2) Storm water discharges associated with an industrial activity that the *Executive Secretary* has determined to be, or may reasonably be expected to be, contributing to a violation of a water quality standard, 3) Storm water discharges associated with industrial activity from inactive mining operations occurring on Federal lands where an operator cannot be identified.

☐ **H. Coal Mines and Coal Mine-Related Facilities** – coal mining-related areas (SIC Major Group 12) if they are not subject to effluent limitations guidelines under 40 CFR Part 434. Not covered are: inactive mining activities occurring on Federal lands where an operator cannot be identified.

☐ **I. Oil and Gas Extraction Facilities** – oil and gas facilities listed under Standard Industrial Classification (SIC) Major Group 13 which are required to be permitted under UAC R317-8-3.8(2)(a)3. These include oil and gas exploration, production, processing, or treatment operations, or transmission facilities that discharge storm water contaminated by contact with or that has come into contact with any overburden raw material, intermediate products, finished products, by-products or waste products located

on the site of such operations." Industries in SIC Major Group 13 include the extraction and production of crude oil, natural gas, oil sands and shale; the production of hydrocarbon liquids and natural gas from coal; and associated oil field service, supply and repair industries. This section also covers petroleum refineries listed under SIC code 2911. Contaminated storm water discharges from petroleum refining or drilling operations that are subject to nationally established BAT or BPT guidelines found at 40 CFR 419 and 435 respectively are not included. [Note that areas eligible for coverage at petroleum refineries will be very limited because the term "contaminated runoff," as defined under 40 CFR 419.11, includes "... runoff which comes into contact with any raw material, intermediate product, finished product, by-product or waste product located on petroleum refinery property." Areas at petroleum refineries which may be eligible for permit coverage, provided discharges from these areas are not co-mingled with "contaminated runoff," include: vehicle and equipment storage, maintenance and refueling areas. Most areas at refineries will not be eligible for coverage including: raw material, intermediate product, by-product, waste material, chemical, and material storage areas; loading and unloading areas; transmission pipelines, and, processing areas.] Not covered are: inactive oil and gas operations occurring on Federal lands where an operator cannot be identified are not covered by this permit.

☐ **J. Mineral Mining and Processing Facilities** – active and inactive mineral mining and processing facilities (generally identified by Standard Industrial Classification (SIC) Major Group 14). Not covered are: 1) facilities associated with industrial activity which are subject to an existing effluent limitation guideline (40 CFR Part 436), 2) inactive mineral mining activities occurring on Federal lands where an operator cannot be identified are not eligible for coverage under this permit.

☐ **K. Hazardous Waste Treatment Storage or Disposal Facilities** – facilities that treat, store, or dispose of hazardous wastes, including those that are operating under interim status or a permit under subtitle C of RCRA. [Disposal facilities that have been properly closed and capped, and have no significant materials exposed to storm water, are considered inactive and do not require permits (UAC R317-8-3.8(6)(c)).]

☒ **L. Landfills and Land Application Sites** – waste disposal at landfills, land application sites, and open dumps that receive or have received industrial wastes. Open dumps are solid waste disposal units that are not in compliance with State/Federal criteria established under RCRA Subtitle D. Not covered are: inactive landfills, land application sites, and open dumps receiving only agricultural or domestic waste.

operator cannot be identified.

☐ **M. Automobile Salvage Yards** – facilities engaged in dismantling or wrecking used motor vehicles for parts recycling or resale and for scrap (SIC Code 5015).

☐ **N. Scrap Recycling and Waste Recycling Facilities** – facilities that are engaged in the processing, reclaiming and wholesale distribution of scrap and waste materials such as ferrous and nonferrous metals, paper, plastic, cardboard, glass, animal hides (these types of activities are typically identified as SIC code 5093). Facilities that are engaged in reclaiming and recycling liquid wastes such as used oil, antifreeze, mineral spirits, and industrial solvents (also identified as SIC code 5093) are also covered under this section. Separate permit requirements have been established for recycling facilities that only receive source-separated recyclable materials primarily from non-industrial and residential sources (also identified as SIC 5093) (e.g., common consumer products including paper, newspaper, glass, cardboard, plastic containers, aluminum and tin cans). This includes recycling facilities commonly referred to as material recovery facilities (MRF).

☐ **O. Steam Electric Power Generating Facilities** – steam electric power generating facilities, including coal handling areas. Non-storm water discharges subject to effluent limitations guidelines are not covered by this permit. Storm water discharges from coal pile runoff subject to numeric limitations are eligible for coverage under this permit, but are subject to the limitations established by 40 CFR 423. Not covered are: ancillary facilities such as fleet centers, gas turbine stations, and substations that are not contiguous to a steam electric power generating facility are not covered by this permit. Heat capture co-generation facilities are not covered by this permit; however, dual fuel co-generation facilities are included.

☐ **P. Vehicle Maintenance or Equipment Cleaning areas at Motor Freight Transportation Facilities, Passenger Transportation Facilities, Petroleum Bulk Oil Stations and Terminals, the United States Postal Service, or Railroad Transportation Facilities** – ground transportation facilities and rail transportation facilities (generally identified by Standard Industrial Classification (SIC) codes 40, 41, 42, 43, and 5171), that have vehicle and equipment maintenance shops (vehicle and equipment rehabilitation, mechanical repairs, painting, fueling and lubrication) and/or equipment cleaning operations are eligible for coverage under this section. Also covered under this section are facilities found under SIC code 4221-4225 (public warehousing and storage) that do not have vehicle and equipment maintenance shops and/or equipment cleaning operations but have areas (exclusive of access roads and rail lines) where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products or industrial machinery are exposed to storm water.

☐ **Q. Vehicle Maintenance Areas and Equipment Cleaning Areas of Water Transportation Facilities** – water transportation facilities that have vehicle (vessel) maintenance shops and/or equipment cleaning operations. The water transportation industry includes facilities engaged in foreign or domestic transport of freight or passengers in deep sea or inland waters; marine cargo handling operations; ferry operations; towing and tugboat services; and marinas (facilities commonly identified by SIC code Major Group 44).

☐ **R. Ship or Boat Building and Repair Yards** – facilities engaged in ship building and repairing and boat building and repairing (SIC code 373).

☐ **S. Vehicle Maintenance Areas, Equipment Cleaning Areas or Airport Deicing Operations located at Air Transportation Facilities** – establishments and/or facilities including airports, air terminals, air carriers, flying fields, and establishments engaged in servicing or maintaining airports and/or aircraft (generally classified under Standard Industrial Classification (SIC) code 45) which have vehicle maintenance shops, material handling facilities, equipment cleaning operations or airport and/or aircraft deicing/anti-icing operations. For the purpose of this permit, the term "deicing" is defined as the process to remove frost, snow, or ice and "anti-icing" is the process which prevents the accumulation of frost, snow, or ice. Only those portions of the facility or establishment that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, or deicing/anti-icing operations are addressed under this section.

☐ **T. Wastewater Treatment Works** – treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including lands dedicated to the disposal of sewage sludge that are located within the confines of the facility with a design flow of 1.0 MGD or more, or required to have an approved pretreatment program under 40 CFR Part 403.

☐ **U. Food and Kindred Products Facilities** – food and kindred products processing facilities (commonly identified by Standard Industrial Classification (SIC) code 20), including: meat products; dairy products; canned, frozen and preserved fruits, vegetables, and food specialties; grain mill products; bakery products; sugar and confectionery products; fats and oils; beverages; and miscellaneous food preparations and kindred products and tobacco products manufacturing (SIC Code 21), except for storm water discharges identified under paragraph I.B.3. where industrial plant yards; material handling sites; refuse sites; sites used for application or disposal of process wastewaters; sites used for storage and maintenance of material handling equipment; sites used for residential treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; and storage areas for raw material and intermediate and finished products are exposed to storm water and areas where industrial activity has taken place in the past and significant materials remain. For the purposes of this paragraph, material handling activities include the storage, loading, and unloading, transportation, or conveyance of any raw material, intermediate product, finished product, by-product, or waste product.

☐ **V. Textile Mills, Apparel and other Fabric Product Manufacturing Facilities** -- Textile Mill Products, of and regarding facilities and establishments engaged in the preparation of fiber and subsequent manufacturing of yarn, thread, braids, twine, and cordage; the manufacturing of broad woven fabrics, narrow woven fabrics, knit fabrics, and carpets and rugs from yarn; processes involved in the dyeing and finishing of fibers, yarn fabrics, and knit apparel; the integrated manufacturing of knit apparel and other finished articles of yarn; the manufacturing of felt goods (wool), lace goods, nonwoven fabrics; miscellaneous textiles, and other apparel products (generally described by SIC codes 22 and 23). This section also covers facilities engaged in manufacturing finished leather and artificial leather products (SIC 31, except 3111).

☐ **W. Furniture and Fixture Manufacturing Facilities** -- facilities involved in the manufacturing of: wood kitchen cabinets (generally described by SIC code 2434); household furniture (generally described by SIC code 251); office furniture (generally described by SIC code 252); public buildings and related furniture (generally described by SIC code 253); partitions, shelving, lockers, and office and store fixtures (generally described by SIC code 254); and miscellaneous furniture and fixtures (generally described by SIC code 259).

☐ **X. Printing and Publishing Facilities** -- newspaper, periodical, and book publishing or publishing and printing (SIC Codes 2711-2731); book printing (SIC Code 2732); miscellaneous publishing (SIC Code 2741); commercial printing, lithographic (SIC Code 2752); commercial printing, gravure (SIC Code 2754); commercial printing, not elsewhere classified (SIC Code 2759); manifold business forms, greeting cards, bankbooks, looseleaf binders and devices, bookbinding and related work, and typesetting (SIC Codes 2761-2791); and, plate making and related services (SIC Code 2796).

☐ **Y. Rubber and Miscellaneous Plastic Product Manufacturing Facilities** -- rubber and miscellaneous plastic products manufacturing facilities (SIC major group 30) and miscellaneous manufacturing industries, except jewelry, silverware, and plated ware (SIC major group 39, except 391).

☐ **Z. Leather Tanning and Finishing Facilities** -- leather tanning, currying and finishing (commonly identified by Standard Industrial Classification (SIC) code 3111). Discharges from facilities that make fertilizer solely from leather scraps and leather dust are also covered under this section.

☐ **AA. Facilities That Manufacture Metal Products including Jewelry, Silverware and Plated Ware** -- fabricated metals industry listed below, except for electrical related industries: fabricated metal products, except machinery and transportation equipment, SIC 34, and jewelry, silverware, and plated ware (SIC Code 391).

☐ **AB. Facilities That Manufacture Transportation Equipment, Industrial or Commercial Machinery** -- transportation equipment, industrial or commercial machinery manufacturing facilities (commonly described by SIC Major Group 35 except SIC 357, and SIC Major Group 37, except SIC 373). Common activities include: industrial plant yards; material handling sites; refuse sites; sites used for application or disposal of process wastewaters; sites used for storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas for raw material and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water.

☐ **AC. Facilities That Manufacture Electronic and Electrical Equipment and Components, Photographic and Optical Goods** -- facilities that manufacture: electronic and other electrical equipment and components, except computer equipment (SIC major group 36); measuring, analyzing, and controlling instruments; photographic, medical and optical goods; watches and clocks (SIC major group 38) and computer and office equipment (SIC code 357).

☐ **AD. Non-Classified Facilities** -- facilities that meet the definition of storm water associated with industrial activity (*UAC R317-8-3.8(6)(c) & (d)*), except for construction activities as defined under *UAC R317-8-3.8(6)(d)10.* but, can not be classified in another industrial sector (i.e., sectors A to AC), and are not excluded from permit coverage elsewhere in this permit; or, the *Executive Secretary* has designated as needing a storm water permit under *UAC R317-8-3.8(1)(a)5.* Should conditions at a facility covered by this section change and industrial activities in another section(s) contained in sectors A to AC apply, the facility shall comply with any and all applicable monitoring and pollution prevention plan requirements of the other section(s) in addition to those contained in this section. The monitoring and pollution prevention plan terms and conditions of this permit are additive for industrial activities being conducted at the same industrial facility (co-located industrial activities). The operator of the facility shall determine which monitoring and pollution prevention plan section(s) of this permit (if any) are applicable to the facility.

**V. CERTIFICATION:** I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Print Name:

Issa Hamud

Date:

5/31/05

Signature:

[Handwritten Signature]

Amount of Permit Fee Enclosed: \$ \_\_\_\_\_

### WHO MUST FILE A NOTICE OF INTENT (NOI) FORM

State law at UAC R317-8-3.8 prohibits point source discharges of storm water associated with industrial activity to a water body(ies) of the State without a Utah Pollutant Discharge Elimination System (UPDES) permit. The operator of an industrial activity that has such a storm water discharge must submit a NOI to obtain coverage under the UPDES Multi-Sector Storm Water General Permit. If you have questions about whether you need a permit under the UPDES Storm Water program, contact (801) 538-6146.



State of Utah

Department of  
Environmental Quality

Dianne R. Nielson, Ph.D.  
*Executive Director*

DIVISION OF WATER QUALITY  
Walter L. Baker, P.E.  
*Director*

Water Quality Board  
Ray M. Child, *Chair*  
Douglas E. Thompson, *Vice-Chair*  
Robert G. Adams  
Paula Doughty  
David F. Echols  
Neil K. Kochenour  
Dianne R. Nielson  
Jay Ivan Olsen  
Joe Piccolo  
Ronald C. Sims  
J. Ann Wechsler  
Walter L. Baker  
*Acting Executive Secretary*

JON M. HUNTSMAN, JR.  
*Governor*

GARY HERBERT  
*Lieutenant Governor*

April 1, 2005

**CERTIFIED MAIL**  
**(Return Receipt Requested)**

Issa Hamud  
City of Logan  
255 North Main  
Logan, UT 84321

Dear Mr. Hamud:

**Subject:** Requirement for Coverage Under the Utah Pollutant Discharge Elimination System (UPDES) Multi Sector General Permit for Storm Water Discharges from Industrial Activities, specifically Landfills and Land Application Sites.

This is to inform you that you are required by State rules and regulations, *Utah Administrative Code (UAC) R317-8-3-9*, to obtain coverage under the UPDES Multi Sector General Permit for Storm Water discharges from Industrial Activities. Specifically you are required to obtain coverage under sector L (Standard Industrial Classification) for discharges from Landfills and Land application sites. The permit requires the development and implementation of a storm water pollution prevention plan for the facility.

A copy of the permit and application form (Notice of Intent) is enclosed. Submit a notice of intent and permit fee for City of Logan within 60 calendar days of the receipt of this letter. Failure to do so may result in penalties of up to \$10,000 per day.

If you have any questions concerning this letter or the permit do not hesitate to contact me at (801) 538-9325. Also, I plan to contact you and arrange a site visit in the near future. Thank you.

Sincerely,

  
Mike George, Environmental Scientist  
Permits and Compliance Section

MG:mc

Enclosure

U:\WQ\PERMITS\Mgeorge\wp\storm water\group 5\SW Landfill Mrg Ltr.doc

Permit No.: UTR000000

STATE OF UTAH  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
DIVISION OF WATER QUALITY  
SALT LAKE CITY, UTAH 84114-4870

FILE COPY

Authorization to Discharge Under the  
Utah Pollutant Discharge Elimination System

Multi-Sector General Permit (MSGP) for Storm Water  
Discharges Associated with Industrial Activities

GROUP 5

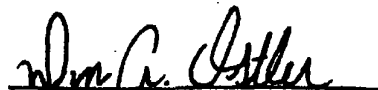
- J. Storm Water Discharges Associated With Industrial Activity From Mineral Mining and Processing Facilities
- K. Storm Water Discharges Associated With Industrial Activity From Hazardous Waste Treatment, Storage, or Disposal Facilities.
- L. Storm Water Discharges Associated With Industrial Activity From Landfills and Land Application Sites
- N. Storm Water Discharges Associated With Industrial Activity From Scrap Recycling and Waste Recycling Facilities.
- O. Storm Water Discharges Associated With Industrial Activity From Steam Electric Power Generating Facilities, Including Coal Handling Areas
- Q. Storm Water Discharges Associated With Industrial Activity From Water Transportation Facilities That Have Vehicle Maintenance Shops and/or Equipment Cleaning Operations
- S. Storm Water Discharges Associated With Industrial Activity From Vehicle Maintenance Areas, Equipment Cleaning Areas, or Deicing Areas Located at Air Transportation Facilities
- T. Storm Water Discharges Associated With Industrial Activity From Treatment Works.
- V. Storm Water Discharges Associated With Industrial Activity From Textile Mills, Apparel, and Other Fabric Product Manufacturing Facilities
- X. Storm Water Discharges Associated With Industrial Activity From Printing and Publishing Facilities
- Y. Storm Water Discharges Associated With Industrial Activity From Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Industries.
- Z. Storm Water Discharges Associated With Industrial Activity From Leather Tanning and Finishing Facilities

In compliance with the provisions of the *Utah Water Pollution Control Act, Title 19, Chapter 5, Utah Code Annotated 1953*, as amended, the Act, the facility identified in the Notice of Intent, is authorized to discharge industrial storm water from the specified industrial site to waters of the State, as identified in the Notice of Intent, in accordance with discharge point(s), effluent limitations, monitoring requirements, and other conditions set forth herein.

This permit is effective January 1, 2003

This permit and the authorization to discharge shall expire at midnight, December 31, 2007

Signed this 1<sup>st</sup> day of January, 2003

  
Don A. Ostler, P.E.  
Executive Secretary

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- T. Wastewater Treatment Works
- U. Food and Kindred Products Facilities
- V. Textile Mills, Apparel and other Fabric Product Manufacturing Facilities
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- X. Printing and Publishing Facilities
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- AC. Facilities That Manufacture Electronic and Electrical Equipment and Components, Photographic and Optical Goods
- AD. Non-Classified Facilities

APPENDIX III.

- A. List of "Section 313" Water Priority Chemicals

## PART I

Permit No.: UTR000000

### I. COVERAGE UNDER THIS PERMIT.

- A. Overview of the Multisector General Permit. Parts I. - VIII. apply to all facilities. Parts I. describe eligibility requirements. Parts II. - VIII. contain "basic" permit requirements.

*Appendix I* contains forms for application or termination of the permit and procedures to do such.

*Appendix II.* provides additional requirements for particular sectors of industrial activity. For example, primary metal facilities add *Appendix II.F.* to the "universal" Parts I. - VIII. requirements.

*Appendix III* contains a list of *EPCRA Section 313* "water priority chemicals".

Some facilities may have "co-located" activities that are described in more than one sector and need to comply with applicable conditions of each sector contained in the *Appendix*. For example, a chemical manufacturing facility could have a land application site and be subject to *Appendix II.C. - Chemical and Allied Products Manufacturing sector* (primary activity), with runoff from the land application site (co-located activity) also subject to conditions in the *Appendix II.L. - Landfills and Land Application Sites sector*.

- B. Permit Area. The permit covers all areas of the State of Utah except for Indian lands<sup>1</sup>.

- C. Eligibility

1. Discharges Covered. Except for storm water discharges identified under *Part I.D.*, this permit may cover all new and existing point source discharges of storm water to waters of the State that are associated with industrial activity identified under the coverage sections contained in *Appendix II.* (see Table 1). Military installations must comply with the permit and monitoring requirements for all sectors that describe industrial activities that such installations perform.

TABLE 1.

Storm Water Discharges From:	Are Covered if Listed in Appendix:
Timber Products Facilities	II.A.1.

<sup>1</sup> The State of Utah, *Division of Water Quality*, does not have permit authority for Indian lands. Storm water permits for Indian lands within the State must be acquired through EPA Region VIII, except for facilities on the Navajo Reservation or on the Goshute Reservation which must acquire storm water permits through EPA Region IX.

**PART I**  
**Permit No.: UTR000000**

<b>Storm Water Discharges From:</b>	<b>Are Covered if Listed in Appendix:</b>
Paper and Allied Products Manufacturing Facilities	II.B.1.
Chemical and Allied Products Manufacturing Facilities	II.C.1.
Asphalt Paving, Roofing Materials, and Lubricant Manufacturing Facilities	II.D.1.
Glass, Clay, Cement, Concrete, and Gypsum Product Manufacturing Facilities	II.E.1.
Primary Metals Facilities	II.F.1.
Metal Mines (Ore Mining and Dressing)	II.G.1.
Coal Mines and Coal Mine-Related Facilities	II.H.1.
Oil or Gas Extraction Facilities	II.I.1.
Mineral Mining and Processing Facilities	II.J.1.
Hazardous Waste Treatment Storage or Disposal Facilities	II.K.1.
Landfills and Land Application Sites	II.L.1.
Automobile Salvage Yards	II.M.1.
Scrap Recycling and Waste Recycling Facilities	II.N.1.
Steam Electric Power Generating Facilities	II.O.1.
Vehicle Maintenance or Equipment Cleaning areas at Motor Freight Transportation Facilities, Passenger Transportation Facilities, Petroleum Bulk Oil Stations and Terminals, the United States Postal Service, or Railroad Transportation Facilities	II.P.1.
Vehicle Maintenance Areas and Equipment Cleaning Areas of Water Transportation Facilities	II.Q.1.
Ship or Boat Building and Repair Yards	II.R.1.
Vehicle Maintenance Areas, Equipment Cleaning Areas or From Airport Deicing Operations located at Air Transportation Facilities	II.S.1.
Wastewater Treatment Works	II.T.1.
Food and Kindred Products Facilities	II.U.1.
Textile Mills, Apparel and other Fabric Product Manufacturing Facilities	II.V.1.
Furniture and Fixture Manufacturing Facilities	II.W.1.
Printing and Publishing Facilities	II.X.1.

PART I

Permit No.: UTR000000

Storm Water Discharges From:	Are Covered if Listed in Appendix:
Rubber and Miscellaneous Plastic Product Manufacturing Facilities	II.Y.1.
Leather Tanning and Finishing Facilities	II.Z.1.
Facilities That Manufacture Metal Products including Jewelry, Silverware and Plated Ware	II.AA.1.
Facilities That Manufacture Transportation Equipment, Industrial or Commercial Machinery	II.AB.1.
Facilities That Manufacture Electronic and Electrical Equipment and Components, Photographic and Optical Goods	II.AC.1.
Non-Classified Facilities	II.AD.1

2. Construction. This permit may authorize storm water discharges associated with industrial activity that are mixed with storm water discharges associated with construction activities provided that the storm water discharge from the construction activity is authorized by and in compliance with the terms of the *UPDES Storm Water General Permit for Construction Activity*, General Permit Number UTR100000.
3. Storm Water Not Associated With Industrial Activity. Storm water discharges associated with industrial activity that are authorized by this permit may be combined with other sources of storm water that are not classified as associated with industrial activity pursuant to *Utah Administrative Code (UAC) R317-8-3.8(6)(c) & (d)* (see also the definition of "storm water discharge associated with industrial activity", *Part VIII.A.21*).
4. Discharges Subject to New Source Performance Standards. Operators of facilities with storm water discharges subject to New Source Performance Standards<sup>2</sup> shall have documentation of a final *DWQ* decision indicating that the *DWQ* has determined that the storm water discharge will have no direct or indirect impact on the affected receiving waters

---

<sup>2</sup>Storm water discharges subject to New Source Performance Standards (NSPS) and that may be covered under this permit include: runoff from material storage piles at cement manufacturing facilities [40 CFR Part 411 Subpart C (established February 23, 1977)]; contaminated runoff from phosphate fertilizer manufacturing facilities [40 CFR Part 418 Subpart A (established April 8, 1974)]; coal pile runoff at steam electric generating facilities [40 CFR Part 423 (established November 19, 1982)]; and runoff from asphalt emulsion facilities [40 CFR Part 443 Subpart A (established July 24, 1975)]. NSPS apply only to discharges from those facilities or installations that were constructed after the promulgation of NSPS. For example, storm water discharges from areas where the production of asphalt paving and roofing emulsions occurs are subject to NSPS only if the asphalt emulsion facility was constructed after July 24, 1975.

PART I  
Permit No.: UTR000000

of the State. This documentation shall be obtained and retained on site by 180 days after the submittal of the Notice of Intent. The information shall be sent to the appropriate address listed in *Part V.B.* of this permit.

D. Limitations on Coverage. The following storm water discharges associated with industrial activity are not authorized by this permit:

1. Storm water discharges associated with industrial activities that are not listed under the coverage sections contained in *Appendix II.* (see Table 1).
2. Storm water discharges subject to New Source Performance Standards except as provided in *Part I.C.4.*
3. Storm water discharges associated with industrial activity that are mixed with sources of non-storm water other than non-storm water discharges that are:
  - a. In compliance with a different *UPDES* permit; or
  - b. Identified by and in compliance with *Part II.A.* (Prohibition of Non-storm Water Discharges) of this permit.
4. Storm water discharges associated with industrial activity that are subject to an existing *UPDES* individual or general permit.
5. Are located at a facility where a *UPDES* permit has been terminated (other than at the request of the permittee) or denied, or that are issued a permit in accordance with *Part VI.M.* (Requirements for Individual or Alternative General Permits) of this permit;
6. Storm water discharges associated with industrial activity that the *Executive Secretary* (of the *Utah Water Quality Board*) has determined to be or may reasonably be expected to be contributing to a violation of a water quality standard. Where such determinations have been made, the discharger will be notified by the *Executive Secretary* of additional requirements for treatment or handling of the discharge or that an individual permit application is necessary. The *Executive Secretary* may authorize coverage under this permit after appropriate controls and implementation procedures, designed to bring the discharges into compliance with water quality standards, have been included in the pollution prevention plan;
7. Discharges subject to storm water effluent guidelines, not described under *Appendix II.*
8. Storm water discharges associated with industrial activity from inactive mining, inactive landfills, or inactive oil and gas operations occurring on Federal lands where an operator cannot be identified.

## PART I

Permit No.: UTR000000

- E. Authorization. Dischargers of storm water associated with industrial activity must submit a complete *NOI* using an *NOI* form as found in *Appendix I* (or photocopy thereof), including payment of the appropriate permit fee to be authorized to discharge under this general permit. Unless notified by the *Executive Secretary* to the contrary, owners or operators who submit such notification are authorized immediately to discharge storm water associated with industrial activity under the terms and conditions of this permit after the *NOI* is received by the *DWQ*. An operator that had coverage under the preceeding expired general storm water industrial permit, must submit the *NOI* from *Appendix I* and a permit fee by January 1, 1998, to have continued coverage under this permit. The *Executive Secretary* may, at any time, deny coverage under this permit and may require submittal of an application for an individual *UPDES* permit based on a review of the *NOI* or other information.
- F. DWQ Intent to Stagger Operator Renewal. The *DWQ* wishes to cover sectors in *Appendix II* identified in the table below for different periods of time under this permit. The table below shows the different time periods (beginning at the effective date of this permit) that the *DWQ* wishes to cover sectors in *Appendix II*. When that period of time is up, the *DWQ* will issue other permits for the specified sectors similar to this permit and with compliance issues scheduled in concert with this permit, such that permittees covered by this permit may continue under other permits with staggered renewal schedules. The objective for this action is to disperse permit renewals so that about 20% of all industrial storm water permittees will be up for renewal each year instead of 100% every 5 years. The purpose for this is simply to disperse the work load for the renewal process over 5 years rather than (how it is now) concentrating all general industrial storm water permit renewals in one year every five years.

Appendix II Sector	Years of Coverage Under This Permit
P	1
I, R, AB, and AC	2
E, G, U, AA, and AD	3
A, B, C, D, F, H, M, T, and W	4
J, K, L, N, O, Q, S, V, Y, and X	5

II. SPECIAL CONDITIONS.

A. Prohibition of Non-storm Water Discharges.

1. Storm Water Discharges. Except as provided in *Part II.A.2.* (below), all discharges covered by this permit shall be composed entirely of storm water.
2. Non-Storm Water Discharges.
  - a. Except as provided in *Part II.A.2.b.* (below), discharges other than storm water must be in compliance with a *UPDES* permit (other than this permit) issued for the discharge.
  - b. The following non-storm water discharges may be authorized by this permit provided the non-storm water component of the discharge is in compliance with *Part III* and *Appendix II*: discharges from fire fighting activities; fire hydrant flushings; potable water sources including waterline flushings; drinking fountain water; irrigation drainage; lawn watering; routine external building washdown that does not use detergents or other compounds; pavement washwaters where spills or leaks of toxic or hazardous materials (including oils and fuels) have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; uncontaminated compressor condensate; uncontaminated springs; uncontaminated ground water; and foundation or footing drains where flows are not contaminated with process materials such as solvents.

B. Releases in Excess of Reportable Quantities.

1. Hazardous Substances or Oil. The discharge of hazardous substances or oil in the storm water discharge(s) from a facility shall be prevented or minimized in accordance with the applicable storm water pollution prevention plan for the facility. This permit does not relieve the permittee of the reporting requirements of *40 CFR Part 117*, *40 CFR Part 110*, and *40 CFR Part 302*. Except as provided in *Part II.B.2.* (Multiple Anticipated Discharges) of this permit, where a release containing a hazardous substance in an amount equal to or in excess of a reporting quantity established under either *40 CFR Part 117*, *40 CFR 110*, or *40 CFR Part 302*, occurs during a 24-hour period:
  - a. The discharger is required to notify the National Response Center (NRC) (800-424-8802; in the Washington, DC metropolitan area 202-426-2675) in accordance with the requirements of *40 CFR Part 117*, *40 CFR 110*, and *40 CFR Part 302* and the *Division of Water Quality (DWQ)* (801-538-6146; or the 24 hour *DWQ* answering service at 801-536-4123) as soon as he or she has knowledge of the discharge; and
  - b. The storm water pollution prevention plan required under *Part III.* (Storm Water Pollution Prevention Plans) of this permit must be modified within 14 calendar days

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of knowledge of the release to: provide a description of the release, the circumstances leading to the release, and the date of the release. In addition, the plan must be reviewed by the permittee to identify measures to prevent the reoccurrence of such releases and to respond to such releases, and the plan must be modified where appropriate; and

- c. The permittee shall submit within 14 calendar days of knowledge of the release a written description of: the release (including the type and estimate of the amount of material released), the date that such release occurred, the circumstances leading to the release, and steps to be taken in accordance with *Part II.B.1.b.* (above) of this permit to the *DWQ* at the address provided in *Part V.B.* (Reporting: Where to Submit) of this permit.
2. Multiple Anticipated Discharges. Facilities that have more than one anticipated discharge per year containing the same hazardous substance in an amount equal to or in excess of a reportable quantity established under either *40 CFR Part 117*, *40 CFR 110*, or *40 CFR Part 302*, that occurs during a 24-hour period, where the discharge is caused by events occurring within the scope of the relevant operating system shall:
  - a. Submit notifications in accordance with *Part II.B.1.b.* (above) of this permit for the first such release that occurs during a calendar year (or for the first year of this permit, after submittal of an NOI); and
  - b. Shall provide in the storm water pollution prevention plan required under *Part III.* (Storm Water Pollution Prevention Plans) a written description of the dates on which all such releases occurred, the type and estimate of the amount of material released, and the circumstances leading to the releases. In addition, the plan must be reviewed to identify measures to prevent or minimize such releases and the plan must be modified where appropriate.
3. Spills. This permit does not authorize the discharge of hazardous substances or oil resulting from an onsite spill.
- C. Co-located Industrial Activity. In the case where a facility has industrial activities occurring onsite which are described by any of the activities in other sections of *Appendix II*, those industrial activities are considered to be co-located industrial activities. Storm water discharges from co-located industrial activities are authorized by this permit, provided that the permittee complies with any and all additional pollution prevention plan and monitoring requirements from other sections of *Appendix II* applicable to the co-located industrial activity. The operator of the facility shall determine which additional pollution prevention plan and monitoring requirements are applicable to the co-located industrial activity by examining the narrative descriptions of each coverage section (Discharges Covered Under This Section) in the NOI form (*Appendix I*) of this permit.

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- D. Discharge Compliance with Water Quality Standards. Dischargers seeking coverage under this permit shall not be causing or have the reasonable potential to cause or contribute to a violation of a water quality standard. Where a discharge is already authorized under this permit and is later determined to cause or have the reasonable potential to cause or contribute to the violation of an applicable Water Quality Standard, the *Executive Secretary* will notify the operator of such violation(s) and the permittee shall take all necessary actions to ensure future discharges do not cause or contribute to the violation of a water quality standard and document these actions in the pollution prevention plan. If violations remain or re-occur, then coverage under this permit will be terminated by the *Executive Secretary* and an alternative permit may be issued or denied. Compliance with this requirement does not preclude any enforcement activity as provided by the *Water Quality Act* for the underlying violation.
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III. **STORM WATER POLLUTION PREVENTION PLANS.** A storm water pollution prevention plan shall be developed for each facility covered by this permit. Storm water pollution prevention plans shall be prepared in accordance with good engineering practices and in accordance with the factors outlined in 40 CFR 125.3(d)(2) or (3) as appropriate. The DWQ recommends that plans be signed by a State registered Professional Engineer (P.E.), particularly where plans are complex, treatment systems are used, and risks to storm water discharges are significant. The plan shall identify potential sources of pollution that may reasonably be expected to affect the quality of storm water discharges associated with industrial activity from the facility. In addition, the plan shall describe and ensure the implementation of practices that are to be used to reduce the pollutants in storm water discharges associated with industrial activity at the facility and to assure compliance with the terms and conditions of this permit. Facilities must implement the provisions of the storm water pollution prevention plan required under this part as a condition of this permit.

A. Deadlines for Plan Preparation and Compliance.

1. Existing Facilities. Except as provided in Part III.A.3. and 4. (below), all existing facilities and new facilities that begin operation on or before October 1, 1998 shall prepare and implement the plan by October 1, 1998.
2. New Facilities. Facilities that begin operation after October 1, 1998 shall prepare and implement the plan prior to submitting the Notice of Intent.
3. Oil and Gas Facilities. Oil and gas exploration, production, processing or treatment facilities that are not required to submit a permit application on or before January 1, 1998, in accordance with UAC R317-8-3.8(2)(a)3., but after October 1, 1998, have a discharge of a reportable quantity of oil or a hazardous substance for which notification is required pursuant to either 40 CFR 110.6 or 40 CFR 302.6, shall prepare and implement the plan on or before the date 60 calendar days after first knowledge of such release.
4. Facilities Continuing Coverage Under the Multi-Sector General Permit upon Expiration of the Baseline General Permit. Facilities previously subject to the UPDES General Permit for Storm Water Discharges Associated With Industrial Activity that are renewing coverage under this permit shall continue to implement the storm water pollution prevention plan required by that permit. The plan shall be revised as necessary to address requirements under Appendix II. of this permit no later than October 1, 1998. The revisions made to the plan shall be implemented on or before October 1, 1998.
5. Measures That Require Construction. In cases where construction is necessary to implement measures required by the plan, the plan shall contain a schedule that provides compliance with the plan as expeditiously as practicable, but no later than January 1, 2001. Where a construction compliance schedule is included in the plan, the schedule shall include appropriate non-structural and/or temporary controls to be implemented in the affected portion(s) of the facility prior to completion of the permanent control measure.

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6. Extensions. Upon a showing of good cause, the *Executive Secretary* may establish a later date in writing for preparing and compliance with a plan for a storm water discharge associated with industrial activity.
- B. Signature and Plan Review .
1. Signature/Location. The plan shall be signed in accordance with *Part VI.G. (Signatory Requirements)*, and be retained onsite at the facility that generates the storm water discharge in accordance with *Part VI.P.2. (Retention of Records)* of this permit. For inactive facilities, the plan may be kept at the nearest office of the permittee.
  2. Plan Availability. The permittee shall make plans available upon request to the *Executive Secretary*; other local agencies approving storm water management plans; interested members of the public; local government officials; or to the operators of a municipal separate storm sewer receiving discharges from the site. Viewing by the public shall be at reasonable times during regular business hours (advance notice by the public of the desire to view the plan may be required, not to exceed two working days). The permit does not require that free copies of the plan be provided to interested members of the public, only that they have access to view the document and copy it at their own expense. The copy of the plan required to be kept onsite (or locally available) must be made available to the *Executive Secretary* (or authorized representative) for review at the time of an onsite inspection.
  3. Required Modifications. The *Executive Secretary*, or authorized representative, may notify the permittee at any time that the plan does not meet one or more of the minimum requirements of this part. Such notification shall identify those provisions of the permit that are not being met by the plan, and identify which provisions of the plan requires modifications in order to meet the minimum requirements of this part. Within 30 days of such notification from the *Executive Secretary*, (or as otherwise provided by the *Executive Secretary*), or authorized representative, the permittee shall make the required changes to the plan and shall submit to the *Executive Secretary* a written certification that the requested changes have been made.
- C. Keeping Plans Current. The permittee shall amend the plan whenever there is a change in design, construction, operation, or maintenance, that has a significant effect on the potential for the discharge of pollutants to the waters of the State or if the storm water pollution prevention plan proves to be ineffective in eliminating or significantly minimizing pollutants from sources identified under *Part III.D. (Contents of the Plan)* of this permit, or in otherwise achieving the general objectives of controlling pollutants in storm water discharges associated with industrial activity. New owners shall review the existing plan and make appropriate changes: Amendments to the plan may be reviewed by the *Executive Secretary*, or an authorized representative, in the same manner as *Part III.B. (above)*.
- D. Contents of the Plan. The contents of the pollution prevention plan shall comply with the

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requirements listed in the appropriate section of *Appendix II*. (Specific Requirements for Industrial Activities). Table 2 lists the location of the plan requirements for the respective industrial activities. These requirements are cumulative. If a facility has co-located activities that are covered in more than one section of *Appendix II*, that facility's pollution prevention plan must comply with the requirements listed in all applicable sections of this permit.

**Table 2**  
**Pollution Prevention Plan Requirements**

<b>Storm Water Discharges From:</b>	<b>Are Subject to Pollution Prevention Plan Requirements Listed in Appendix:</b>
Timber Products Facilities	II.A.3.
Paper and Allied Products Manufacturing Facilities	II.B.3.
Chemical and Allied Products Manufacturing Facilities	II.C.4.
Asphalt Paving, Roofing Materials, and Lubricant Manufacturing Facilities	II.D.3.
Glass, Clay, Cement Concrete and Gypsum Product Manufacturing Facilities	II.E.3.
Primary Metals Facilities	II.F.3.
Metal Mines (Ore Mining and Dressing)	II.G.3.
Coal Mines and Coal Mine-Related Facilities	II.H.3.
Oil or Gas Extraction Facilities	II.I.3.
Mineral Mining and Processing Facilities	II.J.3.
Hazardous Waste Treatment Storage or Disposal Facilities	II.K.3.
Landfills and Land Application Sites	II.L.3.
Automobile Salvage Yards	II.M.2.
Scrap and Waste Recycling Facilities	II.N.3.
Steam Electric Power Generating Facilities	II.O.3.
Vehicle Maintenance or Equipment Cleaning areas at Motor Freight Transportation Facilities, Passenger Transportation Facilities, Petroleum Bulk Oil Stations and Terminals, the United States Postal Service, or Railroad Transportation Facilities	II.P.3.

<b>Storm Water Discharges From:</b>	<b>Are Subject to Pollution Prevention Plan Requirements Listed in Appendix:</b>
Vehicle Maintenance Areas and Equipment Cleaning Areas of Water Transportation Facilities	II.Q.3.
Ship or Boat Building and Repair Yards	II.R.3.
Vehicle Maintenance Areas, Equipment Cleaning Areas or From Airport Deicing Operations located at Air Transportation Facilities	II.S.3.
Wastewater Treatment Works	II.T.3.
Food and Kindred Products Facilities	II.U.3.
Textile Mills, Apparel and other Fabric Product Manufacturing Facilities	II.V.3.
Furniture and Fixture Manufacturing Facilities	II.W.3.
Printing and Publishing Facilities	II.X.3.
Rubber and Miscellaneous Plastic Product Manufacturing Facilities	II.Y.3.
Leather Tanning and Finishing Facilities	II.Z.3.
Facilities That Manufacture Metal Products including Jewelry, Silverware and Plated Ware	II.AA.3.
Facilities That Manufacture Transportation Equipment, Industrial or Commercial Machinery	II.AB.3.
Facilities That Manufacture Electronic and Electrical Equipment and Components, Photographic and Optical Goods	II.AC.3.
Non-Classified Facilities	II.AD.3.

- E. Special Pollution Prevention Plan Requirements. In addition to the minimum standards listed in *Appendix II.* of this permit (Specific Requirements for Industrial Activities), the storm water pollution prevention plan shall include a complete discussion of measures taken to conform with the following applicable guidelines, other effective storm water pollution prevention procedures, and applicable State rules, regulations and guidelines:

1. Additional Requirements for Storm Water Discharges Associated With Industrial Activity that Discharge Into or Through Municipal Separate Storm Sewer Systems Serving a Population of 100,000 or More.

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- a. In addition to the applicable requirements of this permit, facilities covered by this permit are not relieved from meeting applicable requirements in municipal storm water management programs developed under *UPDES* permits issued for the discharge of the municipal separate storm sewer system that receives the facility's discharge.
- b. Permittees that discharge storm water associated with industrial activity through a municipal separate storm sewer system serving a population of 100,000 or more, or a municipal system designated by the *Executive Secretary* shall make plans available to the municipal operator of the system upon request.

2. Additional Requirements for Storm Water Discharges Associated With Industrial Activity From Facilities Subject to EPCRA Section 313 Requirements. In addition to the requirements of *Appendix II.* of this permit and other applicable conditions of this permit, storm water pollution prevention plans for facilities subject to reporting requirements under *EPCRA Section 313* for chemicals that are classified as "Section 313 water priority chemicals" in accordance with the definition in *Part VIII.* of this permit, except as provided in *Part III.E.2.c.* (below), shall describe and ensure the implementation of practices that are necessary to provide for conformance with the following guidelines:

- a. In areas where Section 313 water priority chemicals are stored, processed or otherwise handled, appropriate containment, drainage control and/or diversionary structures shall be provided unless otherwise exempted under *Part III.E.2.c.* At a minimum, one of the following preventive systems or its equivalent shall be used:
  - (1) Curbing, culverting, gutters, sewers, or other forms of drainage control to prevent or minimize the potential for storm water runoff to come into contact with significant sources of pollutants; or
  - (2) Roofs, covers or other forms of appropriate protection to prevent storage piles from exposure to storm water and wind.
- b. In addition to the minimum standards listed under *Part III.E.2.a.* (above) of this permit, except as otherwise exempted under *Part III.E.2.c.* (below) of this permit, the storm water pollution prevention plan shall include a complete discussion of measures taken to conform with other effective storm water pollution prevention procedures, and applicable State rules, regulations, and guidelines:
  - (1) Liquid Storage Areas Where Storm Water Comes Into Contact With Any Equipment, Tank, Container, or Other Vessel Used for Section 313 Water Priority Chemicals.
    - (a) No tank or container shall be used for the storage of a Section 313 water

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priority chemical unless its material and construction are compatible with the material stored and conditions of storage such as pressure and temperature, etc.

- (b) Liquid storage areas for Section 313 water priority chemicals shall be operated to minimize discharges of Section 313 chemicals. Appropriate measures to minimize discharges of Section 313 chemicals may include secondary containment provided for at least the entire contents of the largest single tank plus sufficient freeboard to allow for precipitation, a strong spill contingency and integrity testing plan, and/or other equivalent measures.
- (2) Material Storage Areas for Section 313 Water Priority Chemicals Other Than Liquids. Material storage areas for Section 313 water priority chemicals other than liquids that are subject to runoff, leaching, or wind shall incorporate drainage or other control features that will minimize the discharge of Section 313 water priority chemicals by reducing storm water contact with Section 313 water priority chemicals.
- (3) Truck and Rail Car Loading and Unloading Areas for Liquid Section 313 Water Priority Chemicals. Truck and rail car loading and unloading areas for liquid Section 313 water priority chemicals shall be operated to minimize discharges of Section 313 water priority chemicals. Protection such as overhangs or door skirts to enclose trailer ends at truck loading/unloading docks shall be provided as appropriate. Appropriate measures to minimize discharges of Section 313 chemicals may include: the placement and maintenance of drip pans (including the proper disposal of materials collected in the drip pans) where spillage may occur (such as hose connections, hose reels and filler nozzles) for use when making and breaking hose connections; a strong spill contingency and integrity testing plan; and/or other equivalent measures.
- (4) Areas Where Section 313 Water Priority Chemicals Are Transferred, Processed, or Otherwise Handled. Processing equipment and materials handling equipment shall be operated so as to minimize discharges of Section 313 water priority chemicals. Materials used in piping and equipment shall be compatible with the substances handled. Drainage from process and materials handling areas shall minimize storm water contact with Section 313 water priority chemicals. Additional protection such as covers or guards to prevent exposure to wind, spraying or releases from pressure relief vents from causing a discharge of Section 313 water priority chemicals to the drainage system shall be provided as appropriate. Visual inspections or leak tests shall be provided for overhead piping conveying Section 313 water priority chemicals without secondary containment.

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- (5) Discharges From Areas Covered by Paragraphs (1), (2), (3), or (4) (above).
- (a) Drainage from areas covered by paragraphs (1), (2), (3), or (4) of this part (above) should be restrained by valves or other positive means to prevent the discharge of a spill or other excessive leakage of Section 313 water priority chemicals. Where containment units are employed, such units may be emptied by pumps or ejectors; however, these shall be manually activated.
  - (b) Flapper-type drain valves shall not be used to drain containment areas. Valves used for the drainage of containment areas should, as far as is practical, be of manual, open-and-closed design.
  - (c) If facility drainage is not engineered as above, the final discharge of all in-facility storm sewers shall be equipped to be equivalent with a diversion system that could, in the event of an uncontrolled spill of Section 313 water priority chemicals, return the spilled material to the facility.
  - (d) Records shall be kept of the frequency and estimated volume (in gallons) of discharges from containment areas.
- (6) Facility Site Runoff Other Than From Areas Covered By (1), (2), (3), or (4). Other areas of the facility (those not addressed in paragraphs (1), (2), (3), or (4)), from which runoff that may contain Section 313 water priority chemicals or spills of Section 313 water priority chemicals could cause a discharge shall incorporate the necessary drainage or other control features to prevent discharge of spilled or improperly disposed material and ensure the mitigation of pollutants in runoff or leachate.
- (7) Preventive Maintenance and Housekeeping. All areas of the facility shall be inspected at specific intervals identified in the plan for leaks or conditions that could lead to discharges of Section 313 water priority chemicals or direct contact of storm water with raw materials, intermediate materials, waste materials or products. In particular, facility piping, pumps, storage tanks and bins, pressure vessels, process and material handling equipment, and material bulk storage areas shall be examined for any conditions or failures that could cause a discharge. Inspection shall include examination for leaks, wind blowing, corrosion, support or foundation failure, or other forms of deterioration or noncontainment. Inspection intervals shall be specified in the plan and shall be based on design and operational experience. Different areas may require different inspection intervals. Where a leak or other condition is discovered that may result in significant releases of Section 313 water priority

chemicals to waters of the State, action to stop the leak or otherwise prevent the significant release of Section 313 water priority chemicals to waters of the State shall be immediately taken or the unit or process shut down until such action can be taken. When a leak or noncontainment of a Section 313 water priority chemical has occurred, contaminated soil, debris, or other material must be promptly removed and disposed in accordance with Federal, State, and local requirements and as described in the plan.

- (8) Facility Security. Facilities shall have the necessary security systems to prevent accidental or intentional entry that could cause a discharge. Security systems described in the plan shall address fencing, lighting, vehicular traffic control, and securing of equipment and buildings.
  - (9) Training. Facility employees and contractor personnel that work in areas where Section 313 water priority chemicals are used or stored shall be trained in and informed of preventive measures at the facility. Employee training shall be conducted at intervals specified in the plan, but not less than once per year. Training shall address: pollution control laws and regulations, the storm water pollution prevention plan and the particular features of the facility and its operation that are designed to minimize discharges of Section 313 water priority chemicals. The plan shall designate a person who is accountable for spill prevention at the facility and who will set up the necessary spill emergency procedures and reporting requirements so that spills and emergency releases of Section 313 water priority chemicals can be isolated and contained before a discharge of a Section 313 water priority chemical can occur. Contractor or temporary personnel shall be informed of facility operation and design features in order to prevent discharges or spills from occurring.
- c. Facilities subject to reporting requirements under EPCRA Section 313 for chemicals that are classified as 'Section 313 water priority chemicals' in accordance with the definition in *Part VIII.* of this permit that are handled and stored onsite only in gaseous or non-soluble liquid or solid (at atmospheric pressure and temperature) forms may provide a certification as such in the pollution prevention plan in lieu of the additional requirements in *Part III.E.2.* Such certification shall include a narrative description of all water priority chemicals and the form in which they are handled and stored, and shall be signed in accordance with *Part VI.G.* (Signatory Requirements) of this permit.
  - d. The storm water pollution prevention plan shall be certified in accordance with *Part VI.G.* (Signatory Requirements) of this permit.
- 3. Additional Requirements for Salt Storage. Storage piles of salt used for deicing or other commercial or industrial purposes and that generate a storm water discharge associated with industrial activity that is discharged to waters of the State shall be enclosed or covered

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to prevent exposure to precipitation, except for exposure resulting from adding or removing materials from the pile. The *Executive Secretary* may waive this requirement for salt piles located in areas where surface and/or ground waters are already high in concentrations of salt.

4. Consistency With Other Plans. Storm water pollution prevention plans may reference the existence of other plans for Spill Prevention, Control, and Countermeasure (SPCC), plans developed for the facility under Section 311 of the CWA, or *Best Management Practices (BMP)* Programs otherwise required by a *UPDES* permit for the facility as long as such requirement(s) is incorporated into the storm water pollution prevention plan.
5. Other Laws and Requirements.
  - (1) Local Storm Water Control Requirements. This permit does not relieve the permittee from compliance with other laws affecting storm water discharges. If the requirements of this permit appears to be a conflict in with other laws or local requirements the permittee must contact the *Executive Secretary* within 30 days of knowledge of any discrepancies. Where applicable, compliance efforts to other storm water requirements (as they pertain to water quality issues) should also be reflected in the SWP3.
  - (2) Threatened or Endangered Species & Historic Properties. This permit does not relieve the permittee from compliance with Federal or State laws pertaining to threatened or endangered species or historic properties. Where applicable compliance efforts to these laws should be reflected in the SWP3.

IV. NUMERIC EFFLUENT LIMITATIONS

- A. Discharges Associated With Specific Industrial Activity. Numeric effluent limitations for storm water discharges associated with a specific industrial activity are described in *Appendix II* of this permit.
- B. Coal Pile Runoff. Any discharge composed of coal pile runoff shall not exceed a maximum concentration for any time of 50 mg/L total suspended solids. Coal pile runoff shall not be diluted with storm water or other flows in order to meet this limitation. The pH of such discharges shall be within the range of 6.5 to 9.0. Any untreated overflow from facilities designed, constructed and operated to treat the volume of coal pile runoff that is associated with a 10-year, 24-hour rainfall event shall not be subject to the 50 mg/L limitation for total suspended solids.

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### V. MONITORING AND REPORTING REQUIREMENTS

#### A. Monitoring Requirements.

##### 1. Limitations on Monitoring Requirements.

- a. Except as required by paragraph b. (below), only those facilities with discharges or activities identified in *Part V.C.* and *Appendix II.* are required to conduct sampling of their storm water discharges associated with industrial activity. Monitoring requirements under *Parts V.C.* and *Appendix II.* are additive. Facilities with discharges or activities described in more than one monitoring section are subject to all applicable monitoring requirements from each section.
- b. The *Executive Secretary* can provide written notice to any facility otherwise exempt from the sampling requirements of *Parts V.C.* and *Appendix II.* that it shall conduct discharge sampling for a specific monitoring frequency for specific parameters.

#### B. Reporting: Where to Submit.

1. Location. Signed copies of storm water discharge monitoring reports (SWDMR) required under *Parts V.C.* and *Appendix II.*, individual permit applications, and all other reports required herein, shall be submitted to the *Executive Secretary* of the *Water Quality Board* at the address listed below. For each outfall, one SWDMR form must be submitted per storm event sampled.

Division of Water Quality  
PO Box 144870  
Salt Lake City, Utah 84114-4870

2. Additional Notification. In addition to filing copies of discharge monitoring reports in accordance with *Part V.B.1* (above), facilities with at least one storm water discharge associated with industrial activity through a large or medium municipal separate storm sewer system (systems serving a population of 100,000 or more) or a municipal system designated by the *Executive Secretary* must submit signed copies of discharge monitoring reports to the operator of the municipal separate storm sewer system in accordance with the dates provided in *Appendix II.* Facilities not required to report monitoring data under *Appendix II.* and facilities that are not otherwise required to monitor their discharges, have no need to comply with this provision.

- C. Special Monitoring Requirements for Coal Pile Runoff. During the period beginning on the effective date and lasting through the expiration date of this permit, permittees with storm water discharges containing coal pile runoff shall monitor such storm water for: pH and TSS (mg/l) at least annually (1 time per year). Permittees with discharges containing coal pile runoff must report in accordance with *Part IV.B.* (Coal Pile Runoff) and *Part V.B.* (Reporting: Where to

Submit). In addition to the parameters listed above, the permittee shall provide the date and duration (in hours) of the storm event(s) sampled; rainfall measurements or estimates (in inches) of the storm event that generated the sampled runoff; the duration between the storm event samples and the end of the previous measurable (greater than 0.1 inch rainfall) storm event; and an estimate of the total volume (in gallons) of the discharge samples.

1. Sample Type. Discharges containing coal pile runoff shall be monitored by a grab sample(s). All such samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. The required 72-hour storm event interval is waived where the preceding measurable storm event did not result in a measurable discharge from the facility. The required 72-hour storm event interval may also be waived where the permittee documents that less than a 72-hour interval is representative for local storm events during the season when sampling is being conducted. The grab sample shall be taken during the first 30 minutes of the discharge. If the collection of a grab sample during the first 30 minutes is impracticable, a grab sample can be taken during the first hour of the discharge, and the discharger shall submit with the monitoring report a description of why a grab sample during the first 30 minutes was impracticable.
2. Sampling Waiver. When a discharger is unable to collect samples of coal pile runoff due to adverse climatic conditions, the discharger shall collect a substitute sample from a separate qualifying event in the next period and submit this data along with the data for the routine sample in that period. Adverse weather conditions that may prohibit the collection of samples include weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (drought, extended frozen conditions, etc.).
3. Representative Discharge. When a facility has two or more outfalls containing coal pile runoff that, based on a consideration of the other industrial activity, and significant materials, and upon management practices and activities within the area drained by the outfall, and the permittee reasonably believes substantially identical effluents are discharged, the permittee may test the effluent of one of such outfalls and report that the quantitative data also applies to the substantially identical outfalls provided that the permittee includes in the storm water pollution prevention plan a description of the location of the outfalls and explains in detail why the outfalls are expected to discharge substantially identical effluents. In addition, for each outfall that the permittee believes is representative, an estimate of the size of the drainage area (in square feet) and an estimate of the runoff coefficient of the drainage area (e.g., low (under 40 percent), medium (40 to 65 percent) or high (above 65 percent)) shall be provided in the plan. Permittees required to submit monitoring information under *Part VI.* of this permit shall include the description of the location of the outfalls, explanation of why outfalls are expected to discharge substantially identical effluents, and estimate of the size of the drainage area and runoff coefficient with the SWDMR. This representative discharge provision is not applicable to storm water

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discharges from coal piles regulated under the national effluent limitations guidelines.

4. Alternative Certification. Facilities with storm water discharges containing coal pile runoff may not submit alternative certification in lieu of the required monitoring data.
5. When to Submit. Permittees with discharges containing coal pile runoff shall submit monitoring results annually no later than the 28th day of January.

VI. STANDARD PERMIT CONDITIONS

A. Duty to Comply.

1. Permittee's Duty to Comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the *Act* and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.
2. Penalties for Violations of Permit Conditions.
  - a. Negligent Violations. The *Act* provides that any person who negligently violates permit conditions implementing the *Act*, this permit, or the Utah wastewater rules is subject to a fine of \$10,000 per day.
  - b. Willful or Gross Negligence. The *Act* provides that any person who willfully or with gross negligence violates *UCA 19-5-107(1)* (discharges a pollutant to waters of the State) or a condition or limitation of this permit is subject to a fine of \$25,000 per day or \$50,000 per day for any person twice convicted.
  - c. False Statements. The *Act* provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under the *Act* or who knowingly falsifies, tampers with, or renders inaccurate, any monitoring device or method required to be maintained under the *Act* shall upon conviction, be punished by a fine of not more than \$10,000 or by imprisonment by 6 months, or by both.

B. Continuation of the Expired General Permit. This permit, expires on December 31, 2002. However, an expired general permit may continue in force and effect after the expiration date until a new permit is issued if a timely reapplication is made for the new permit (*UAC R317-8-3.1(1)(d)*). If this permit is not renewed by the *Division of Water Quality*, for some reason, the *Executive Secretary* will notify the permittee and provide instructions concerning how to stay in compliance with the the *Utah Water Quality Act* and the *Utah Wastewater Rules (UAC R317-8)* with the discharge(s) that is(are) covered by this permit.

C. Need to Halt or Reduce Activity Not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

E. Duty to Provide Information. The permittee shall furnish to the *Executive Secretary* or an

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authorized representative any information which is requested to determine compliance with this permit or other information. The permittee shall also furnish copies of records required to be kept by this permit to the *Executive Secretary* upon request.

F. Other Information. When the permittee becomes aware that he or she failed to submit any relevant facts or submitted incorrect information in the *NOI* or in any other report to the *Executive Secretary*, he or she shall promptly submit such facts or information.

G. Signatory Requirements. All *Notices of Intent*, storm water pollution prevention plans, reports, certifications or information either submitted to the *Executive Secretary* or the operator of a large or medium municipal separate storm sewer system, or that this permit requires be maintained by the permittee, shall be signed as follows:

1. All *Notices of Intent* shall be signed as follows:

a. For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or the manager of one or more manufacturing, production or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25,000,000 (in second-quarter 1980 dollars) if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(1) the chief executive officer of the agency, or

(2) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g. Regional Administrators of EPA).

2. All reports required by the permit and other information requested by the *Executive Secretary* or by an authorized representative of the *Executive Secretary* shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described above and submitted to

the *Executive Secretary*.

- b. The authorization specifies either an individual or a position having responsibility for overall operation of the regulated facility or activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position).
- c. Changes to authorization. If an authorization under *Part VI.G.2.* is no longer accurate because a different operator has responsibility for the overall operation of the construction site, a new notice of intent satisfying the requirements of *Part I.C. & D.* must be submitted to the *Executive Secretary* prior to or together with any reports, information, or applications to be signed by an authorized representative.
- d. Certification. Any person signing documents under *Part VI.G.* shall make the following certification:

*"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."*

- H. Penalties for Falsification of Reports. The "*Act*" provides that any person who knowingly makes any false material statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six months, or by both.
- I. Penalties for Falsification of Monitoring Systems. The "*Act*" provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by fines and imprisonment described in 19-5-111 of the "*Act*".
- J. Oil and Hazardous Substance Liability. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under the "*Act*".
- K. Property Rights. The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of

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personal rights, nor any infringement of Federal, State, or local laws or regulations.

- L. Severability. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.
- M. Requiring an Individual Permit or an Alternative General Permit.
1. Executive Secretary Designation. The *Executive Secretary* may require any person authorized by this permit to apply for and/or obtain either an individual *UPDES* permit or an alternative *UPDES* general permit. Any interested person may petition the *Executive Secretary* to take action under this paragraph. The *Executive Secretary* may require any owner or operator authorized to discharge under this permit to apply for an individual *UPDES* permit only if the owner or operator has been notified in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form, a statement setting a deadline for the owner or operator to file the application, and a statement that on the effective date of issuance or denial of the individual *UPDES* permit or the alternative general permit as it applies to the individual permittee, coverage under this general permit shall automatically terminate. Individual permit applications shall be submitted to the address of the *DWQ* shown in *Part V.B.* (Reporting: Where to Submit) of this permit. The *Executive Secretary* may grant additional time to submit the application upon request of the applicant. If an owner or operator fails to submit, in a timely manner, an individual *UPDES* permit application as required by the *Executive Secretary*, then the applicability of this permit to the individual *UPDES* permittee is automatically terminated at the end of the day specified for application submittal.
  2. Individual Permit Application. Any owner or operator authorized by this permit may request to be excluded from the coverage of this permit by applying for an individual permit. The owner or operator shall submit an individual application (EPA, Form 1 and Form 2F) with reasons supporting the request to the *Executive Secretary*. Individual permit applications shall be submitted to the address of the *DWQ* shown in *Part V.B.* of this permit. The request may be granted by the issuance of any individual permit or an alternative general permit if the reasons cited by the owner or operator are adequate to support the request.
  3. Individual/Alternative General Permit Issuance. When an individual *UPDES* permit is issued to an owner or operator otherwise subject to this permit, or the owner or operator is authorized for coverage under an alternative *UPDES* general permit, the applicability of this permit to the individual *UPDES* permittee is automatically terminated on the effective date of the individual permit or the date of authorization of coverage under the alternative general permit, whichever the case may be. When an individual *UPDES* permit is denied to an owner or operator otherwise subject to this permit, or the owner or operator is denied

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for coverage under an alternative *UPDES* general permit, the applicability of this permit to the individual *UPDES* permittee is automatically terminated on the date of such denial, unless otherwise specified by the *Executive Secretary*.

N. State/Environmental Laws.

1. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by *UCA 19-5-117*.
2. No condition of this permit shall release the permittee from any responsibility or requirements under other environmental statutes or regulations.

O. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of storm water pollution prevention plans. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by a permittee only when necessary to achieve compliance with the conditions of the permit.

P. Monitoring and Records.

1. Representative Samples/Measurements. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
2. Retention of Records.
  - a. The permittee shall retain records of all monitoring information, copies of all reports required by this permit, and records of all data used to complete the application of this permit for a period of at least three (3) years from the date of sample, measurement, evaluation or inspection, report, or application. This period may be extended by request of the *Executive Secretary* at any time. Permittees must submit any such records to the *Executive Secretary* upon request.
  - b. The permittee shall retain the pollution prevention plan developed in accordance with *Part III.* and *Appendix II.* of this permit until a date 3 years after the last modification or amendment is made to the plan, and at least 1 year after coverage under this permit terminates.
3. Records Contents. Records of monitoring information shall include:
  - a. The date, exact place, and time of sampling or measurements;

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- b. The initials or name(s) of the individual(s) who performed the sampling or measurements;
  - c. The date(s) analyses were performed;
  - d. The time(s) analyses were initiated;
  - e. The initials or name(s) of the individual(s) who performed the analyses;
  - f. References and written procedures, when available, for the analytical techniques or methods used; and
  - g. The results of such analyses, including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine these results.
4. Approved Monitoring Methods. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.
- Q. Inspection and Entry. The permittee shall allow the *Executive Secretary* or an authorized representative, the EPA, or in the case of a facility that discharges through a municipal separate storm sewer, an authorized representative of the municipal operator or the separate storm sewer receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to: enter upon the permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit; have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and inspect at reasonable times any facilities or equipment (including monitoring and control equipment).
- R. Permit Actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.
- S. Bypass of Treatment Facility.
- 1. Notice.
    - a. Anticipated Bypass. If a permittee subject to the numeric effluent limitations of *Parts IV. and Appendix II.* of this permit knows in advance of the need for a bypass, he or she shall submit prior notice, if possible, at least 10 days before the date of the bypass; including an evaluation of the anticipated quality and effect of the bypass.

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- b. Unanticipated Bypass. The permittee subject to the numeric effluent limitations of *Parts IV. and Appendix II.* of this permit shall submit notice of an unanticipated bypass. Any information regarding the unanticipated bypass shall be provided orally within 24 hours from the time the permittee became aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee became aware of the circumstances. The written submission shall contain a description of the bypass and its cause; the period of the bypass; including exact dates and times, and if the bypass has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass.

2. Prohibition of Bypass.

- a. Bypass is prohibited and the *Executive Secretary* may take enforcement action against a permittee for a bypass. Unless:
- (1) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
  - (2) There were no feasible alternatives to the bypass, such as the use of auxiliary facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if the permittee should, in the exercise of reasonable engineering judgement, have installed adequate backup equipment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance; and
  - (3) The permittee submitted notices of the bypass.
- b. The *Executive Secretary* may approve an anticipated bypass after considering its adverse effects, if the *Executive Secretary* determines that it will meet the three conditions listed in *Part VI.S.2.a.*

T. Upset Conditions.

1. Affirmative Defense. An upset constitutes an affirmative defense to an action brought for noncompliance with technology-based numeric effluent limitations in *Parts IV. and Appendix II.* of this permit if the requirements of paragraph 2 below are met. The *Executive Secretary's* administrative determination regarding a claim of upset cannot be judiciously challenged by the permittee until such time as an action is initiated for noncompliance.
2. Required Defense. A permittee who wishes to establish the affirmative defense of an upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence, that:

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- a. An upset occurred and that the permittee can identify the specific cause(s) of the upset:
  - b. The permitted facility was at the time being properly operated; and
  - c. The permittee provided oral notice of the upset to the *Executive Secretary* within 24 hours from the time the permittee became aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee became aware of the circumstances. The written submission shall contain a description of the upset and its cause; the period of the upset; including exact dates and times, and if the upset has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the upset.
3. **Burden of Proof.** In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

VII. REOPENER CLAUSE

- A. Potential or Realized Impacts on Water Quality. If there is evidence indicating potential or realized impacts on water quality or on a listed endangered species due to any storm water discharge associated with industrial activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or an alternative general permit in accordance with *Part VI.M.* (Requiring an Individual Permit or an Alternative General Permit) of this permit or the permit may be modified to include different limitations and/or requirements.
- B. Applicable Regulations. Permit modification or revocation will be conducted according to *UAC R317-8-5.6* and *UAC R317-8-6.2.*

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VIII. DEFINITIONS

A. Definitions Pertaining to this Permit.

1. "Act" means the "*Utah Water Quality Act*".
2. "*Best Management Practices*" ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.
3. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.
4. "Coal pile runoff" means the rainfall runoff from or through any coal storage pile.
5. "Co-located industrial activity" means when a facility has industrial activities being conducted onsite that are described under more than one of the coverage sections of *Appendix H* in this permit (Discharges Covered Under This Permit). Facilities with co-located industrial activities shall comply with all applicable monitoring and pollution prevention plan requirements of each section in which a co-located industrial activity is described.
6. "CWA" means "*Clean Water Act*" (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972).
7. "Commercial Treatment and Disposal Facilities" means facilities that receive, on a commercial basis, any produced hazardous waste (not their own) and treat or dispose of those wastes as a service to the generators. Such facilities treating and/or disposing exclusively residential hazardous wastes are not included in this definition.
8. "DWQ" means the "*Division of Water Quality*", the State agency authorized by the EPA to administer the *National Pollutant Discharge Elimination System (NPDES)* permitting program, described in the *CWA Section 402*, within the State of Utah (except for Indian lands). Since jurisdiction is limited to the State of Utah the program administered by the DWQ is called the *Utah Pollutant Discharge Elimination System (UPDES)*.
9. "Executive Secretary" means the *Executive Secretary* of the *Water Quality Board*.
10. "Flow-weighted composite sample" means a composite sample consisting of a mixture of aliquots collected at a constant time interval, where the volume of each aliquot is proportional to the flow rate of the discharge.

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11. "Landfill" means an area of land or an excavation in which wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile.
12. "Land application unit" means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.
13. "Municipal separate storm sewer system" (large and/or medium) means all municipal separate storm sewers that are either:
  - a. located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (at the issuance date of this permit, Salt Lake City is the only city in Utah that falls in this category); or
  - b. located in the counties with unincorporated urbanized populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships or towns within such counties (at the issuance date of this permit Salt Lake County is the only county that falls in this category); or
  - c. owned or operated by a municipality other than those described in paragraph a. or b. (above) and that are designated by the *Executive Secretary* as part of the large or medium municipal separate storm sewer system.
14. "NOT" means "notice of intent", it is an application form that is used to obtain coverage under this permit (see *Appendix I*).
15. "NOT" means "notice of termination", it is a form used to terminate coverage under this permit (see *Appendix I* of this permit.).
16. "Point source" means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.
17. "Section 313 water priority chemical" means a chemical or chemical categories that:
  - a. are listed at 40 CFR 372.65 pursuant to Section 313 of the *Emergency Planning and Community Right-to-Know Act (EPCRA)* (also known as *Title III of the Superfund Amendments and Reauthorization Act (SARA)* of 1986);
  - b. are present at or above threshold levels at a facility subject to *EPCRA Section 313* reporting requirements; and

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c. meet at least one of the following criteria:

- (1) are listed in *Appendix D* of *40 CFR Part 122* on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols) or Table V (certain toxic pollutants and hazardous substances);
- (2) are listed as a hazardous substance pursuant to *Section 311(b)(2)(A)* of the *CWA* at *40 CFR 116.4*; or
- (3) are pollutants for which EPA has published acute or chronic water quality criteria. See *Appendix III* of this permit. This appendix was revised based on final rulemaking EPA published in the *Federal Register* November 30, 1994.

18. "Significant materials" includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under *Section 101(14)* of *CERCLA*; any chemical the facility is required to report pursuant to *EPCRA Section 313*; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.
19. "Significant spills" includes, but is not limited to: releases of oil or hazardous substances in excess of reportable quantities under *Section 311 of the Clean Water Act* (see *40 CFR 110.10* and *CFR 117.21*) or *Section 102 of CERCLA* (see *40 CFR 302.4*).
20. "Storm water" means storm water runoff, snow melt runoff, and surface runoff and drainage.
21. "SWDMR" means "storm water discharge monitoring report", a report of the results of storm water monitoring required by the permit. A storm water discharge monitoring report form is provided by the Division of Water Quality.
22. "Storm water associated with industrial activity" (*UACR 317-8-3.8(6)(c) & (d)*) means the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term does not include discharges from facilities or activities excluded from the *UPDES* program. For the categories of industries identified in paragraphs (a) through (j) of this definition, the term includes, but is not limited to, storm water discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters (as defined in *40 CFR Part 401*); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage,

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or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water. For the categories of industries identified in paragraph (k) of this definition, the term includes only storm water discharges from all areas (except access roads and rail lines) listed in the previous sentence where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water. For the purposes of this paragraph, material handling activities include the storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, finished product, by-product or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with storm water drained from the above described areas. Industrial facilities (including industrial facilities that are Federally, State, or municipally owned or operated that meet the description of the facilities listed in paragraphs (a) to (k) of this definition) include those facilities designated under *UAC R317-8-3.8(1)(a)5*. The following categories of facilities are considered to be engaging in "industrial activity" for purposes of this subsection:

- a. Facilities subject to storm water effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards under *40 CFR Subchapter N* (except facilities with toxic pollutant effluent standards that are exempted under category (k) of this definition);
- b. Facilities classified as Standard Industrial Classifications 24 (except 2434), 26 (except 265 and 267), 28 (except 283 and 285), 29, 311, 32 (except 323), 33, 3441, 373;
- c. Facilities classified as Standard Industrial Classifications 10 through 14 (mineral industry) including active or inactive mining operations (except for areas of coal mining operations no longer meeting the definition of a reclamation area under *40 CFR 434.11(l)* because the performance bond issued to the facility by the appropriate SMCRA authority has been released, or except for areas of noncoal mining operations that have been released from applicable State or Federal reclamation requirements after December 17, 1990) and oil and gas exploration, production, processing, or treatment operations, or transmission facilities that discharge storm water contaminated by contact with or that has come into contact with, any overburden, raw material, intermediate products, finished products, byproducts or waste products located on the site of such operations; inactive mining operations are mining sites that are not being actively mined, but that have an identifiable owner/operator;
- d. Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under Subtitle C of RCRA;

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- e. Landfills, land application sites, and open dumps that have received any industrial wastes (waste that is received from any of the facilities described under this subsection) including those that are subject to regulation under *Subtitle D of RCRA*;
- f. Facilities involved in the recycling of materials, including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards, including but limited to those classified as Standard Industrial Classification 5015 and 5093;
- g. Steam electric power generating facilities, including coal handling sites;
- h. Transportation facilities classified as Standard Industrial Classifications 40, 41, 42 (except 4221-25), 43, 44, 45 and 5171 that have vehicle maintenance shops, equipment cleaning operations, or airport deicing operations. Only those portions of the facility that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, airport deicing operations, or that are otherwise identified under paragraphs (a) to (g) or (l) to (k) of this subsection are associated with industrial activity;
- i. Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of 1.0 mgd or more, or required to have an approved pretreatment program under *40 CFR Part 403*. Not included are farm lands, domestic gardens or lands used for sludge management where sludge is beneficially reused and that are not physically located in the confines of the facility, or areas that are in compliance with *40 CFR Part 503*;
- j. Construction activity including clearing, grading and excavation activities except: operations that result in the disturbance of less than 5 acres of total land area that are not part of a larger common plan of development or sale;
- k. Facilities under Standard Industrial Classifications 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 285, 30, 31 (except 311), 323, 34 (except 3441), 35, 36, 37 (except 373), 38, 39, 4221-25, (and that are not otherwise included within categories (a) to (j))<sup>3</sup>.

23. "Time-weighted composite" means a composite sample consisting of a mixture of equal

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<sup>3</sup>On June 4, 1992, the United States Court of Appeals for the Ninth Circuit remanded the exclusion for manufacturing facilities in category (xi) that do not have materials or activities exposed to storm water to the EPA for further rulemaking. (Nos. 90-70671 and 91-70200.)

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volume aliquots collected at a constant time interval.

24. "UAC" means "Utah Administrative Code" the administrative rules for the State of Utah.
25. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with the numeric effluent limitations of *Parts IV. and Appendix II.* of this permit because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
26. "Waste pile" means any noncontainerized accumulation of solid, nonflowing waste that is used for treatment or storage.
27. "Waters of the State" (*UAC R317-1-1.32*) means all streams, lakes, ponds, marshes, water-courses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, which are contained within, flow through, or border upon this state or any portion thereof, except that bodies of water confined to and retained within the limits of private property, and which do not develop into or constitute a nuisance, or a public health hazard, or a menace to fish and wildlife, shall not be considered to be "waters of the state".

**APPENDIX I**

**NOTICE OF INTENT & NOTICE OF TERMINATION**

**STATE OF UTAH, DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER QUALITY**

288 North 1460 West, PO Box 144870, Salt Lake City, Utah 84114-4870 (801) 538-6146

**NOT**

Notice of Termination (NOT) for Storm Water Discharges Associated with Industrial Activity Under the UPDES General Multi-Sector Permit.

**INSTRUCTIONS ON BACK**

Submission of this Notice of Termination constitutes notice that the party identified in Section II of this form is no longer authorized to discharge storm water associated with industrial activity under the UPDES program. ALL NECESSARY INFORMATION MUST BE PROVIDED ON THIS FORM.

**I. Permit Information**

UPDES Storm Water General Permit Number: \_\_\_\_\_

Check Here if You are No Longer the Operator of the Facility: **G**

Check Here if the Storm Water Discharge is Being Terminated: **G**

**II. Facility Operator Information**

Name: \_\_\_\_\_ Phone: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

**III. Facility Site/Location Information**

Name: \_\_\_\_\_

Address: \_\_\_\_\_ County: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_ Quarter: \_\_\_\_\_ Section: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_

**Certification:** I certify under penalty of law that all storm water discharges associated with industrial activity from the identified facility that are authorized by a UPDES general permit have been eliminated or that I am no longer the operator of the industrial activity. I understand that by submitting this Notice of Termination, I am no longer authorized to discharge storm water associated with industrial activity under this general permit, and that discharging pollutants in storm water associated with industrial activity to waters of the State is unlawful under the State of Utah Water Quality Act where the discharge is not authorized by a UPDES permit. I also understand that the submittal of this Notice of Termination does not release an operator from liability for any violations of this permit or the Water Quality Act.

Print Name: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

**Instructions for Completing Notice of Termination (NOT) Form**

**Who May File A Notice Of Termination (NOT) Form**

Permittees who are presently covered under the State issued Utah Pollutant Discharge Elimination System (UPDES) General Multi-Sector Permit for Storm Water Discharges Associated with Industrial Activity may submit a Notice of Termination (NOT) form when their facilities no longer have any storm water discharges associated with industrial activity as defined in the storm water regulations at UAC R317-8-3.8(b)(c) and (d), or when they are no longer the operator of the facilities.

**Where to File NOT Form**

Send this form to the following address:

Division of Water Quality  
288 North 1460 West  
P.O. Box 144870  
Salt Lake City, Utah 84114-4870

**PLEASE SEE THE REVERSE SIDE OF THIS FORM FOR FURTHER INSTRUCTIONS**

## INSTRUCTIONS

Notice of Termination (NOT) of Coverage Under the UPDES General Multi-Sector Permit  
for Storm Water Discharges Associated With Industrial Activity**Completing the Form**

Type or print, using upper-case letters, in the appropriate areas only. Please place each character between the marks. Abbreviate if necessary to stay within the number of characters allowed for each item. Use only one space for breaks between words, but not for punctuation marks unless they are needed to clarify your response. If you have any questions about this form, call the Division of Water Quality at (801) 538-6146.

**Section I - Permit Information**

Enter the existing UPDES Storm Water General Permit number assigned to the facility or site identified in Section III. If you do not know the permit number, contact the Division of Water Quality at (801) 538-6146.

Indicate your reason for submitting this Notice of Termination by checking the appropriate box:

If there has been a change of operator and you are no longer the operator of the facility or site identified in Section III, Check the corresponding box.

If all storm water discharges at the facility or site identified in Section III have been terminated, check the corresponding box.

**Section II - Facility Operator Information**

Give the legal name of the person, firm, public organization, or any other entity that operates the facility or site described in this application. The name of the operator may or may not be the same name as the facility. The operator of the facility is the legal entity which controls the facility's operation, rather than the plant or site manager. Do not use a colloquial name. Enter the complete address and telephone number of the operator.

**Section III - Facility/Site Location Information**

Enter the facility's or site's official or legal name and complete address, including city, state and ZIP code. If the facility lacks a street address, indicate the state, the latitude and longitude of the facility to the nearest 15 seconds, or the quarter, section, township, and range (to the nearest quarter section) of the approximate center of the site.

**Section IV - Certification**

State statutes provide for severe penalties for submitting false information on this application form. State regulations require this application to be signed as follows:

*For a corporation:* by a responsible corporate officer, which means: (i) president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions, or (ii) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

*For a partnership or sole proprietorship:* by a general partner or the proprietor; or

*For a municipality, State, Federal, or other public facility:* by either a principal executive officer or ranking elected official.

**APPENDIX II**

**POLLUTION PREVENTION PLAN REQUIREMENTS  
FOR INDUSTRIAL SECTORS (LISTED A THROUGH AD)**

L. Storm Water Discharges Associated With Industrial Activity From Landfills and Land Application Sites.

1. Coverage of This Section.

- a. Discharges Covered Under This Section. The requirements listed under this section shall apply to storm water discharges associated with industrial activity from waste disposal at landfills, land application sites, and open dumps that receive or have received industrial wastes. Open dumps are solid waste disposal units that are not in compliance with State/Federal criteria established under RCRA Subtitle D. Landfills, land application sites, and open dumps that have storm water discharges from other types of industrial activities such as vehicle maintenance, truck washing, and/or recycling may be subject to additional requirements specified elsewhere in this permit.
- b. Limitations. Storm water discharges associated with industrial activities from inactive landfills, land application sites, and open dumps occurring on Federal lands where an operator cannot be identified are ineligible for coverage under this permit.
- c. Co-Located Industrial Activities. When an industrial facility, described by the above coverage provisions of this section, has industrial activities being conducted onsite that meet the description(s) of industrial activities in another section(s), that industrial facility shall comply with any and all applicable monitoring and pollution prevention plan requirements of the other section(s) in addition to all applicable requirements in this section. The monitoring and pollution prevention plan terms and conditions of this multi-sector permit are additive for industrial activities being conducted at the same industrial facility (co-located industrial activities). The operator of the facility shall determine which other monitoring and pollution prevention plan section(s) of this permit (if any) are applicable to the facility.

2. Special Conditions.

- a. Prohibition of Non-storm Water Discharges. In addition to the broad non-storm water prohibition in *Part II.A.* of this permit, the discharge of leachate and vehicle and equipment washwaters to waters of the State or a municipal separate storm sewer system is not authorized by this permit. Operators with such discharges must obtain coverage under a separate *UPDES* permit (other than this permit).

3. Storm Water Pollution Prevention Plan Requirements.

- a. Contents of Plan. The plan shall include, at a minimum, the following items:
  - (1) Pollution Prevention Team. Each plan shall identify a specific individual or individuals within the facility organization as members of a storm water Pollution Prevention Team that are responsible for developing the storm water pollution prevention plan and assisting the facility or plant manager in its implementation, maintenance, and revision. The plan shall clearly identify the responsibilities of each team member. The activities

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and responsibilities of the team shall address all aspects of the facility's storm water pollution prevention plan.

- (2) Description of Potential Pollutant Sources. Each plan shall provide a description of potential sources which may reasonably be expected to add significant amounts of pollutant to storm water discharges or which may result in the discharge of pollutants during dry weather from separate storm sewers draining the facility. Each plan shall identify all activities and significant materials which may potentially be significant pollutant sources. Each plan shall include, at a minimum:

(a) Drainage:

- i) A site map indicating an outline of the portions of the drainage area of each storm water outfall that are within the facility boundaries, each existing structural control measure to reduce pollutants in storm water runoff, surface water bodies, locations of active and closed landfill cells or trenches, locations of active and closed land application areas, locations where open dumping is occurring or has occurred, locations of any known leachate springs or other areas where uncontrolled leachate may commingle with runoff, locations of any leachate collection and handling systems, locations where major spills or leaks identified under paragraph 3.a(2)(c) (Spills and Leaks) of this permit have occurred, and locations of the following activities where such activities are exposed to precipitation: fueling station, vehicle and equipment maintenance and/or cleaning areas, and waste and other significant material loading/unloading and storage areas. The map must indicate the outfall locations and the types of discharges contained in the drainage areas of the outfalls.
- ii) For each area of the facility that generates storm water discharges associated with industrial activity with a reasonable potential for containing significant amounts of pollutants, a prediction of the direction of flow, and an identification of the types of pollutants which are likely to be present in storm water discharges associated with industrial activity. Factors to consider include the toxicity of chemicals; quantities of chemicals used, produced or discharged; the likelihood of contact with storm water; and the history of significant leaks or spills of toxic or hazardous pollutants. Flows with a significant potential for causing erosion shall be identified.

- (b) Exposed Inventory of Materials. An inventory of the types of materials handled at the site that potentially may be exposed to precipitation. Such inventory shall include a narrative description of significant materials that have been handled, treated, or disposed of in a manner to allow exposure to storm water between the time of 3 years prior to the date of the submission of a *Notice of Intent (NOI)* to

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be covered under this permit and the present; method and location of onsite storage or disposal; materials management practices employed to minimize contact of materials with storm water runoff between the time of 3 years prior to the date of submission of a *Notice of Intent (NOI)* to be covered under this permit and the present; the location and a description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff; and a description of any treatment the storm water receives. The inventory of exposed materials shall include, but shall not be limited to the significant material management practices employed.

- (c) Spills and Leaks. A list of significant spills and significant leaks of toxic or hazardous pollutants that occurred at areas that are exposed to precipitation or that otherwise drain to a storm water conveyance at the facility after the date of 3 years prior to the date of the submission of a *Notice of Intent (NOI)* to be covered under this permit. Such list shall be updated as appropriate during the term of the permit.
  - (d) Sampling Data. A summary of existing discharge sampling data describing pollutants in storm water of sampling data collected during the term of this permit. Permittees shall also provide all available sampling data for leachate generated at the site.
  - (e) Risk Identification and Summary of Potential Pollutant Sources. Include a narrative description of potential pollutant sources associated with any of the following, providing they occur at the facility: fertilizer, herbicide and pesticide application; earth/soil moving; waste hauling and loading/unloading; outdoor storage of significant materials including daily, interim and final cover material stockpiles as well as temporary waste storage areas; exposure of active and inactive landfill, land application, or open dumping areas; uncontrolled leachate flows; failure or leaks from leachate collection and treatment systems; haul roads; and vehicle tracking of sediments. The description shall specifically list any significant potential sources of pollutants at the site and for each potential source, any pollutant or pollutant parameter (e.g., biochemical oxygen demand, etc.) of concern shall be identified.
- (3) Measures and Controls. Each facility covered by this permit shall develop a description of storm water management controls appropriate for the facility, and implement such controls. The appropriateness and priorities of controls in a plan shall reflect identified potential sources of pollutants at the facility. The description of storm water management controls shall address the following minimum components, including a schedule for implementing such controls:
- (a) Good Housekeeping. Good housekeeping requires the maintenance of areas which may contribute pollutants to storm water discharges in a clean, orderly

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manner. Permittees shall consider providing protected materials storage areas for pesticides, herbicides, fertilizers, and other significant materials.

- (b) Preventive Maintenance. A preventive maintenance program shall involve timely inspection and maintenance of storm water management devices (e.g., cleaning oil/water separators, catch basins) as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters, and ensuring appropriate maintenance of such equipment and systems.

Where applicable, permittees addressed by this section shall also:

- i) maintain containers used for outdoor chemical and significant materials storage to prevent leaking or rupture;
  - ii) maintain all elements of leachate collection and treatment systems to prevent commingling of leachate with storm water; and
  - iii) maintain the integrity and effectiveness of any intermediate or final cover, including making repairs to the cover as necessary to minimize the effects of settlement, sinking, and erosion.
- (c) Spill Prevention and Response Procedures. Areas where potential spills which can contribute pollutants to storm water discharges can occur, and their accompanying drainage points shall be identified clearly in the storm water pollution prevention plan. Where appropriate, specifying material handling procedures, storage requirements, and use of equipment such as diversion valves in the plan should be considered. Procedures for cleaning up spills shall be identified in the plan and made available to the appropriate personnel. The necessary equipment to implement a clean up should be available to personnel.
- (d) Inspections. Qualified facility personnel shall be identified to inspect designated equipment and areas of the facility at appropriate intervals specified in the plan.
- i) For operating landfills, open dumps, and land application sites, inspections shall be conducted at least once every 7 days. Qualified personnel shall inspect areas of landfills and open dumps that have not yet been finally stabilized, active land application areas, areas used for storage of materials/wastes that are exposed to precipitation, stabilization and structural control measures, leachate collection and treatment systems, and locations where equipment and waste trucks enter and exit the site. Where landfill areas and open dumps have been finally stabilized and where land application has been completed, or during seasonal arid periods in arid areas (areas with an average annual rainfall of 0 to 10 inches) and semiarid

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areas (areas with an average annual rainfall of 10 to 20 inches), inspections will be conducted at least once every month. Erosion and sediment control measures shall be observed to ensure they are operating correctly.

- ii) For inactive landfills, open dumps, and land application sites, inspections shall be conducted at least quarterly, and qualified personnel shall inspect: landfill or open dump stabilization and structural erosion control measures and leachate collection and treatment systems, and all closed land application areas.
  - iii) A set of tracking or follow-up procedures shall be used to ensure that appropriate actions are taken in response to the inspections. The pollution prevention plan shall be revised to address any problems found during inspections. Records of inspections shall be maintained.
- (e) Employee Training. Employee training programs shall inform personnel responsible for implementing activities identified in the storm water pollution prevention plan or otherwise responsible for storm water management at all levels of responsibility of the components and goals of the storm water pollution prevention plan. Training should address topics such as conducting inspections, spill response, good housekeeping, conducting inspections and material management practices. The pollution prevention plan shall identify periodic dates for such training.
- (f) Recordkeeping and Internal Reporting Procedures. A description of incidents (such as spills, or other discharges), along with other information describing the quality and quantity of storm water discharges shall be included in the plan required under this part. Inspections and maintenance activities shall be documented and records of such activities shall be incorporated into the plan. Landfill and open dump operators shall provide for a tracking system for the types of wastes disposed of in each cell or trench of a landfill or open dump. Land application site operators shall track the types and quantities of wastes applied in specific areas.
- (g) Non-storm Water Discharges.
- i) Certification. The plan shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharges including leachate and vehicle wash waters. The certification shall include the identification of potential significant sources of non-storm water at the site, a description of the results of any test and/or evaluation for the presence of non-storm water discharges, the evaluation criteria or testing method used, the date of any testing and/or evaluation, and the onsite drainage points that were directly observed during the test. Certifications

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shall be signed in accordance with *Part VI.G.* of this permit. Such certification may not be feasible if the facility operating the storm water discharge associated with industrial activity does not have access to an outfall, manhole, or other point of access to the ultimate conduit which receives the discharge. In such cases, the source identification section of the storm water pollution prevention plan shall indicate why the certification required by this part was not feasible, along with the identification of potential significant sources of non-storm water at the site. A discharger that is unable to provide the certification required by this paragraph must notify the *Executive Secretary* in accordance with paragraph 3.a.(3)(g)(iii) (below).

- ii) Exceptions. Except for flows from fire fighting activities, sources of non-storm water listed in *Part II.A.2* (Prohibition of Non-storm Water Discharges) of this permit that are combined with storm water discharges associated with industrial activity must be identified in the plan. The plan shall identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge.
- iii) Failure to Certify Any facility that is unable to provide the certification required (testing for non-storm water discharges), must notify the *Executive Secretary* by October 1, 1998, or, for facilities which begin to discharge storm water associated with industrial activity after January 1, 1998, 180 days after submitting an NOI to be covered by this permit. If the failure to certify is caused by the inability to perform adequate tests or evaluations, such notification shall describe: the procedure of any test conducted for the presence of non-storm water discharges; the results of such test or other relevant observations; potential sources of non-storm water discharges to the storm sewer; and why adequate tests for such storm sewers were not feasible. Non-storm water discharges to waters of the State which are not authorized by a *UPDES* permit are unlawful, and must be terminated.
- (h) Sediment and Erosion Control The plan shall identify areas which, due to topography activities, or other factors, have a high potential for significant soil erosion, and identify structural, vegetative, and/or stabilization measures to be used to limit erosion.

Landfill and open dump operators shall provide for temporary stabilization of materials stockpiled for daily, intermediate, and final cover. Stabilization practices to consider include, but are not limited to, temporary seeding, mulching, and placing geotextiles on the inactive portions of the stockpiles.

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Landfill and open dump operators shall provide for temporary stabilization of inactive areas of the landfill or open dump which have an intermediate cover but no final cover.

Landfill and open dump operators shall provide for temporary stabilization of any landfill or open dumping areas which have received a final cover until vegetation has established itself. Land application site operators shall also stabilize areas where waste application has been completed until vegetation has been established.

- (i) **Management of Runoff.** The plan shall also contain a narrative consideration of the appropriateness of traditional storm water management practices (practices other than those which control the generation or source(s) of pollutants) used to divert, infiltrate, reuse, or otherwise manage storm water runoff in a manner that reduces pollutants in storm water discharges from the site. The plan shall provide that measures that the permittee determines to be reasonable and appropriate shall be implemented and maintained. The potential of various sources at the facility to contribute pollutants to storm water discharges associated with industrial activity [see paragraph 3.a.(2) of this section (Description of Potential Pollutant Sources)] shall be considered when determining reasonable and appropriate measures. Appropriate measures may include: silt fences, earth dikes, gradient terraces, drainage swales, sediment traps, check dams, pipe slope drains, level spreaders, storm drain inlet protection, rock outlet protection, reinforced soil retaining systems, gabions and temporary or permanent sediment basins, or other equivalent measures. Structural practices should be placed on upland soils as practicable.
- (4) **Comprehensive Site Compliance Evaluation.** Qualified personnel shall conduct site compliance evaluations at appropriate intervals specified in the plan, but in no case less than once a year. Such evaluations shall provide:
  - (a) Areas contributing to a storm water discharge associated with industrial activity at landfill, open dump and land application sites shall be visually inspected for evidence of, or the potential for, pollutants entering the drainage system. Measures to reduce pollutant loadings shall be evaluated to determine whether they are adequate and properly implemented in accordance with the terms of the permit or whether additional control measures are needed. Structural storm water management measures, sediment and erosion control measures, and other structural pollution prevention measures identified in the plan shall be observed to ensure that they are operating correctly. A visual inspection of equipment needed to implement the plan such as spill response equipment, shall be made.
  - (b) Based on the results of the evaluation, the description of potential pollutant sources identified in the plan in accordance with paragraph 3.a.(2) of this section

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(Description of Potential Pollutant Sources) and pollution prevention measures and controls identified in the plan in accordance with paragraph 3.a.(3) of this section (Measures and Controls) shall be revised as appropriate within 2 weeks of such evaluation and shall provide for implementation of any changes to the plan in timely manner, but in no case more than 12 weeks after the evaluation.

- (c) A report summarizing the scope of the evaluation, personnel making the evaluation, the date(s) of the evaluation, major observations relating to the implementation of the storm water pollution prevention plan for at least 3 years from the date of the evaluation. The report shall identify any incidents of noncompliance. Where a report does not identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the storm water pollution prevention plan and this permit. The report shall be signed in accordance with *Part VI.G. (Signatory Requirements)* of this permit.
  - (d) Where compliance evaluation schedules overlap with inspections required under 3.a.(3)(d), the compliance evaluation may be conducted in place of one such inspection.
4. **Numeric Effluent Limitations.** There are no additional numeric effluent limitations beyond those in *Part IV.B.* of this permit.
5. **Monitoring and Reporting Requirements**
- a. **Analytical Monitoring Requirements.** During the period January 1, 1999, lasting through to December 31, 1999, and the period beginning January 1, 2001, lasting through December 31, 2001, permittees with landfill/land application/open dump sites must monitor their storm water discharges associated with industrial activity at least quarterly (4 times per year) during years 2 and 4 of this permit except as provided in paragraphs 5.a.(3) (Sampling Waiver), 5.a.(4) (Representative Discharge), and 5.a.(5) (Alternative Certification). Landfill/land application/open dump sites are required to monitor their storm water discharges for the pollutants of concern listed in Table L-1 below. Facilities must report in accordance with 5.b. (Reporting). In addition to the parameters listed in Table L-1 below, the permittee shall provide: the date and duration (in hours) of the storm event(s) sampled; rainfall measurements or estimates (in inches) of the storm event that generated the sampled runoff; the duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event; and, an estimate of the total volume (in gallons) of the discharge sampled.

**Table L-1.**  
**Industry Monitoring Requirements**

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Pollutants of Concern	Cut-Off Concentration
Total Suspended Solids (TSS) <sup>1</sup>	100 mg/L
Total Recoverable Iron <sup>2</sup>	1.0 mg/L

<sup>1</sup>Applicable to all landfill and land application sites.

<sup>2</sup>Applicable to all facilities except MSWLF areas closed in accordance with 40 CFR 258.60 requirements.

- (1) Monitoring Periods. Landfill/land application/open dump sites shall monitor samples collected during the sampling periods of: January through March, April through June, July through September, and October through December for the years specified in paragraph a. (above).
- (2) Sample Type. A minimum of one grab sample shall be taken. All such samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. The required 72-hour storm event interval is waived where the preceding measurable storm event did not result in a measurable discharge from the facility. The required 72-hour storm event interval may also be waived where the permittee documents that less than a 72-hour interval is representative for local storm events during the season when sampling is being conducted. The grab sample shall be taken during the first 30 minutes of the discharge. If the collection of a grab sample during the first 30 minutes is impracticable, a grab sample can be taken during the first hour of the discharge, and the discharger shall submit with the monitoring report a description of why a grab sample during the first 30 minutes was impracticable. If storm water discharges associated with industrial activity commingle with process or nonprocess water, then where practicable, permittees must attempt to sample the storm water discharge before it mixes with the non-storm water discharge.
- (3) Sampling Waiver.
  - (a) Adverse Conditions. When a discharger is unable to collect samples within a specified sampling period due to adverse climatic conditions, the discharger shall collect a substitute sample from a separate qualifying event in the next period and submit the data along with data for the routine sample in that period. Adverse weather conditions that may prohibit the collection of samples include weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (e.g., drought, extended frozen conditions, etc.).
  - (b) Low Concentration Waiver. When the average concentration for a pollutant calculated from all monitoring data collected from an outfall during the

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monitoring period January 1, 1999, lasting through December 31, 1999, is less than the corresponding value for that pollutant listed in Table L-1 under the column Monitoring Cut-Off Concentration, a facility may waive monitoring and reporting requirements in the monitoring period beginning January 1, 2001, lasting through December 31, 2001. The facility must submit to the *Executive Secretary*, in lieu of the monitoring data, a certification that there has not been a significant change in industrial activity or the pollution prevention measures in area of the facility which drains to the outfall for which sampling was waived.

- (c) Inactive and Unstaffed Site. When a discharger is unable to conduct quarterly chemical storm water sampling at an inactive and unstaffed site, the operator of the facility may exercise a waiver of the monitoring requirements as long as the facility remains inactive and unstaffed. The facility must submit to the *Executive Secretary*, in lieu of monitoring data, a certification statement on the *Storm Water Discharge Monitoring Report (SWDMR)* stating that the site is inactive and unstaffed so that collecting a sample during a qualifying event is not possible.
- (4) Representative Discharge. When a facility has two or more outfalls that, based on a consideration of industrial activity, significant materials, and management practices and activities within the area drained by the outfall, the permittee reasonably believes discharge substantially identical effluents, the permittee may test the effluent of one of such outfalls and report that the quantitative data also applies to the substantially identical outfall(s) provided that the permittee includes in the storm water pollution prevention plan a description of the location of the outfalls and explains in detail why the outfalls are expected to discharge substantially identical effluents. In addition, for each outfall that the permittee believes is representative, an estimate of the size of the drainage area (in square feet) and an estimate of the runoff coefficient of the drainage area [e.g., low (under 40 percent), medium (40 to 65 percent), or high (above 65 percent)] shall be provided in the plan. The permittee shall include the description of the location of the outfalls, explanation of why outfalls are expected to discharge substantially identical effluents, and estimate of the size of the drainage area and runoff coefficient with the *SWDMR*.
- (5) Alternative Certification. A discharger is not subject to the monitoring requirements of this section provided the discharger makes a certification for a given outfall or on a pollutant-by-pollutant basis in lieu of monitoring reports required under paragraph *b.* below, under penalty of law, signed in accordance with Part VI.G. (Signatory Requirements), that material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, industrial machinery or operations, or significant materials from past industrial activity, that are located in areas of the facility within the drainage area of the outfall are not presently exposed to storm water and are not expected to be exposed to storm water for the certification period. Such certification must be retained in the storm water pollution

prevention plan, and submitted to *DWQ* in accordance with *Part V.B.* of the fact sheet to this permit. In the case of certifying that a pollutant is not present, the permittee must submit the certification along with the monitoring reports required under paragraph *b* below. If the permittee cannot certify for an entire period, they must submit the date exposure was eliminated and any monitoring required up until that date. This certification option is not applicable to compliance monitoring requirements associated with effluent limitations.

- b. Reporting. Permittees with landfill/land application/open dump sites shall submit monitoring results for each outfall associated with industrial activity [or a certification in accordance with Sections (3), (4), or (5) above] obtained during the monitoring period beginning January 1, 1999, and lasting through December 31, 1999, on *SWDMR* form(s) postmarked no later than the 31st day of the month of March, 2000. Monitoring results [or a certification in accordance with Sections (3), (4), or (5) above] obtained during the period beginning January 1, 2001, and lasting through December 30, 2001, shall be submitted on *SWDMR*s postmarked no later than the 31st day of the month of March, 2002. For each outfall, one *SWDMR* form must be submitted per storm event sampled. Signed copies of *SWDMR*, or alternative certifications, shall be submitted to the *Executive Secretary* at the address listed in *Part V.B.* of this permit.
- (1) Additional Notification. In addition to filing copies of discharge monitoring reports in accordance with paragraph *1.b.* (above) landfill/land application/open dump sites, with at least one storm water discharge associated with industrial activity through a large or medium municipal separate storm sewer system (systems serving a population of 100,000 or more) must submit signed copies of discharge monitoring reports to the operator of the municipal separate storm sewer system in accordance with the dates provided in paragraph *1.b.* (above).
- c. Quarterly Visual Examination of Storm Water Quality. Facilities shall perform and document a visual examination of a storm water discharge associated with industrial activity from each outfall, except discharges exempted below. The examination must be made at least once in each designated period [described in (1) below] during daylight hours unless there is insufficient rainfall or snow melt to produce a runoff event.
- (1) Visual Monitoring Period. Examinations shall be conducted in each of the following periods for the purposes of visually inspecting storm water quality associated with storm water runoff or snow melt: January through March; April through June; July through September; October through December.
- (2) Sample and Data Collection. Examinations shall be made of samples collected within the first 30 minutes (or as soon thereafter as practical, but not to exceed 1 hour) of when the runoff or snowmelt begins discharging. The examinations shall document observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution. The

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examination must be conducted in a well lit area. No analytical tests are required to be performed on the samples. All such samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. Where practicable, the same individual should carry out the collection and examination of discharges for the entire permit term.

- (3) Visual Storm Water Discharge Examination Report. Visual examination reports must be maintained onsite in the pollution prevention plan. The report shall include the examination date and time, examination personnel, the nature of the discharge (i.e., runoff or snow melt), visual quality of the storm water discharge (including observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution), and probable sources of any observed storm water contamination.
- (4) Representative Discharge. When a facility has two or more outfalls that, based on a consideration of industrial activity, significant materials, and management practices and activities within the area drained by the outfall, the permittee reasonably believes discharge substantially identical effluents, the permittee may collect a sample of effluent of one of such outfalls and report that the examination data also applies to the substantially identical outfall(s) provided that the permittee includes in the storm water pollution prevention plan a description of the location of the outfalls and explains in detail why the outfalls are expected to discharge substantially identical effluents. In addition, for each outfall that the permittee believes is representative, an estimate of the size of the drainage area (in square feet) and an estimate of the runoff coefficient of the drainage area [e.g., low (under 40 percent), medium (40 to 65 percent), or high (above 65 percent)] shall be provided in the plan.
- (5) Adverse Conditions. When a discharger is unable to conduct a visual examination as a result of adverse climatic conditions, the discharger must document the reason for not performing the visual examination and retain this documentation onsite with the records of the visual examination. Adverse weather conditions which may prohibit the collection of samples include weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (drought, extended frozen conditions, etc.).
- (6) Inactive and Unstaffed Site. When a discharger is unable to conduct visual storm water examinations at an inactive and unstaffed site, the operator of the facility may exercise a waiver of the monitoring requirement as long as the facility remains inactive and unstaffed. The facility must maintain a certification with the pollution prevention plan stating that the site is inactive and unstaffed so that performing visual examinations during a qualifying event is not feasible.

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6. Definition.

- a. "Inactive Landfill" For the purposes of this permit, a landfill is considered inactive when, on a permanent basis, it will no longer receive waste and has completed closure in accordance with any applicable Federal, State, and/or local requirements.

**Appendix III**

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**APPENDIX III**

**SECTION 313 WATER PRIORITY CHEMICALS**

SECTION 13 WATER PRIORITY CHEMICALS	
CAS Number	Common Name
75-07-0	Acetaldehyde
75865	Acetane cyonhydrin
107-02-8	Acrolein
107-13-1	Acrylonitrile
309-00-2	Aldrin[1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-bexahydro-(1.alpha.,4.alpha.,4a.beta.,5.alpha.,8.alpha.,8a.beta.)-]
107-05-1	Allyl Chloride
7429-90-5	Aluminum (fume or dust)
7664-41-7	Ammonia
62-53-3	Aniline
120-12-7	Anthracene
7440-36-0	Antimony
7647189	Antimony pentachloride
28300745	Antimony potassium tartrate
7789619	Antimony tribromide
10025919	Antimony trichloride
7783564	Antimony trifluoride
1309644	Antimony trioxide
7440-38-2	Arsenic
1303328	Arsenic disulfide
1303282	Arsenic pentoxide
7784341	Arsenic trichloride
1327533	Arsenic trioxide
1303339	Arsenic trisulfide
1332-21-4	Asbestos (friable)

Appendix III

SECTION III - WATER PRIORITY CHEMICALS	
PLAS Number	Common Name
542621	Barium cyanide
71-43-2	Benzene
92-87-5	Benzidine
100470	Benzonitrile
98-88-4	Benzoyl chloride
100-44-7	Benzyl chloride
7440-41-7	Beryllium
7787475	Beryllium chloride
7787497	Beryllium fluoride
7787555	Beryllium nitrate
111-44-4	Bis(2-chloroethyl) ether
75-25-2	Bromoform
74-83-9	Bromomethane (Methyl bromide)
85-68-7	Butyl benzyl phthalate
7440-43-9	Cadmium
543908	Cadmium acetate
7789426	Cadmium bromide
10108642	Cadmium chloride
7778441	Calcium arsenate
52740166	Calcium arsenite
13765190	Calcium chromate
592018	Calcium cyanide
133-06-2	Captan [1H-Isoindole-1,3(2H)-dione,3a,4,7,7a-tetrahydro-2- [(trichloromethyl)thio]-]
63-25-2	Carbaryl [1-Naphthalenol, methylcarbamate]
75-15-0	Carbon disulfide

SECTION III. WATERBORNE CHEMICALS	
CAS Number	Common Name
56-23-5	Carbon tetrachloride
57-74-9	Chlordane [4,7-Methanoindan,1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-]
7782-50-5	Chlorine
59-50-7	Chloro-4-methyl-3-phenol <i>p</i> -Chloro- <i>m</i> -cresol
108-90-7	Chlorobenzene
75-00-3	Chloroethane (Ethyl chloride)
67-66-3	Chloroform
74-87-3	Chloromethane (Methyl chloride)
95-57-8	2-Chlorophenol
106-48-9	4-Chlorophenol
1066304	Chromic acetate
11115745	Chromic acid
10101538	Chromic sulfate
7440-47-3	Chromium
1308-14-1	Chromium (Tri)
10049055	Chromous chloride
7789437	Cobaltous bromide
544183	Cobaltous formate
14017415	Cobaltous sulfamate
7440-50-8	Copper
108-39-4	<i>m</i> -Cresol
9548-7	<i>o</i> -Cresol
106-44-5	<i>p</i> -Cresol
1319-77-3	Cresol (mixed isomers)
142712	Cupric acetate

Appendix III

SECTION 300A HET PRIORITY CHEMICALS	
CAS Number	Common Name
12002038	Cupric acetoarsenite
7447394	Cupric chloride
3251238	Cupric nitrate
5893663	Cupric oxalate
7758987	Cupric sulfate
10380297	Cupric sulfate, ammoniated
815827	Cupric tartrate
57-12-5	Cyanide
506774	Cyanogen chloride
110-82-7	Cyclohexane
94-75-7	2,4-D [Acetic acid, (2,4-dichlorophenoxy)-]
106-93-4	1,2-Dibromoethane (Ethylene dibromide)
84-74-2	Dibutyl phthalate
25321-22-6	Dichlorobenzene (mixed isomers)
95-50-1	1,2-Dichlorobenzene
541-73-1	1,3-Dichlorobenzene
106-46-7	1,4-Dichlorobenzene
91-94-1	3,3'-Dichlorobenzidine
75-27-4	Dichlorobromomethane
107-06-2	1,2-Dichloroethane (Ethylene dichloride)
540-59-0	1,2-Dichloroethylene
120-83-2	2,4-Dichlorophenol
78-87-5	1,2-Dichloropropane
542-75-6	1,3-Dichloropropylene
62-73-7	Dichlorvos [Phosphoric acid, 2,2-dichloroethenyl dimethyl ester]

SECTION 15 WATER PRIORITY CHEMICALS	
CAS Number	Common Name
115-32-2	Dicofol [Benzenemethanol, 4-chloro- $\alpha$ -(4-chlorophenyl)- $\alpha$ -(trichloromethyl)-]
177-81-7	Di-(2-ethylhexyl phthalate (DEHP)
84-66-2	Diethyl phthalate
105-67-9	2,4-Dimethylphenol
131-11-3	Dimethyl phthalate
534-52-1	4,6-Dinitro- <i>o</i> -cresol
51-28-5	2,4-Dinitrophenol
121-14-2	2,4-Dinitrotoluene
606-20-2	2,6-Dinitrotoluene
117-84-0	<i>n</i> -Dioctyl phthalate
122-66-7	1,2-Diphenylhydrazine (Hydrazobenzene)
106-89-8	Epichlorohydrin
100-41-4	Ethylbenzene
106934	Ethylene dibromide
50-00-0	Formaldehyde
76-44-8	Heptachlor [1,4,5,6,7,8,8-Heptachloro-3 $\alpha$ ,4,7,7 $\alpha$ -tetrahydro-4,7-methano-1H-indene]
118-74-1	Hexachlorobenzene
87-68-3	Hexachloro-1,3-butadiene
77-47-4	Hexachlorocyclopentadiene
67-72-1	Hexachloroethane
7647-01-0	Hydrochloric acid
74-90-8	Hydrogen cyanide
7664-39-3	Hydrogen fluoride
7439-92-1	Lead

Appendix III

SECTION III - WATER PESTICIDE CHEMICALS	
	Common Name
301042	Lead acetate
7784409	Lead arsenate
7645252	Lead arsenate
10102484	" "
7758954	Lead chloride
13814965	Lead fluoborate
7783462	Lead fluoride
10101630	Lead iodide
10099748	Lead nitrate
7428480	Lead stearate
1072351	" "
52652592	" "
7446142	Lead sulfate
1314870	Lead sulfide
592870	Lead thiocyanate
58-89-9	Lindane [Cyclohexane, 1,2,3,4,5,6-hexachloro- (1.alpha.,3.beta.,4.alpha.,5.alpha.,6.beta.)-]
14307358	Lithium chromate
108-31-6	Maleic anhydride
592041	Mercuric cyanide
10045940	Mercuric nitrate
7783359	Mercuric sulfate
592858	Mercuric thiocyanate
7782867	Mercurous nitrate
7439-97-6	Mercury
72-43-5	Methoxychlor [Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-methoxy-]]

SECTION 319 WATER PRIORITY CHEMICALS	
Cas Number	
80-62-6	Methyl methacrylate
91-20-3	Naphthalene
7440-02-0	Nickel
15699180	Nickel ammonium sulfate
37211055	Nickel chloride
7718549	" "
12054487	Nickel hydroxide
14216752	Nickel nitrate
7786814	Nickel sulfate
7697-37-2	Nitric acid
98-95-3	Nitrobenzene
88-75-5	2-Nitrophenol
100-02-7	4-Nitrophenol
62-75-9	<i>N</i> -Nitrosodimethylamine
86-30-6	<i>N</i> -Nitrosodiphenylamine
621-64-7	<i>N</i> -Nitrosodi- <i>n</i> -propylamine
56-38-2	Parathion [Phosphorothioic acid, O,O-diethyl-O-(4-nitrophenyl) ester]
87-86-5	Pentachlorophenol (PCP)
108-95-2	Phenol
75-44-5	Phosgene
7664-38-2	Phosphoric acid
7723-14-0	Phosphorus (yellow or white)
1336-36-3	Polychlorinated biphenyls (PCBs)
7784410	Potassium arsenate
10124502	Potassium arsenite
7778509	Potassium bichromate

Appendix III

SECTION III: TOXIC TRIBUTY CHEMICALS	
ECAS Number	Common Name
7789006	Potassium chromate
151508	Potassium cyanide
75-56-9	Propylene oxide
91-22-5	Quinoline
7782-49-2	Selenium
7446084	Selenium oxide
7440-22-4	Silver
7761888	Silver nitrate
7631892	Sodium arsenate
7784465	Sodium arsenite
10588019	Sodium bichromate
7775113	Sodium chromate
143339	Sodium cyanide
10102188	Sodium selenite
7782823	" "
7789062	Strontium chromate
100-42-5	Styrene
7664-93-9	Sulfuric acid
79-34-5	1,1,2,2-Tetrachloroethane
127-18-4	Tetrachloroethylene (Perchloroethylene)
935-95-5	2,3,5,6-Tetrachlorophenol
78002	Tetraethyl lead
7440-28-0	Thallium
10031591	Thallium sulfate
108-88-3	Toluene
8001-35-2	Toxaphene

SECTION 301 WAIVER PRIORITY CHEMICALS	
	Common Name
52-68-6	Trichlorfon [Phosphonic acid, (2,2,2-trichloro-1-hydroxyethyl)-dimethylester]
120-82-1	1,2,4-Trichlorobenzene
71-55-6	1,1,1-Trichloroethane (Methyl chloroform)
79-00-5	1,1,2-Trichloroethane
79-01-6	Trichloroethylene
95-95-4	2,4,5-Trichlorophenol
88-06-2	2,4,6-Trichlorophenol
7440-62-2	Vanadium (fume or dust)
108-05-4	Vinyl acetate
75-01-4	Vinyl chloride
75-35-4	Vinylidene chloride
108-38-3	<i>m</i> -Xylene
95-47-6	<i>o</i> -Xylene
106-42-3	<i>p</i> -Xylene
1330-20-7	Xylene (mixed isomers)
7440-66-6	Zinc (fume or dust)
557346	Zinc acetate
14639975	Zinc ammonium chloride
14639986	" " "
52628258	" " "
1332076	Zinc borate
7699458	Zinc bromide
3486359	Zinc carbonate
7646857	Zinc chloride
557211	Zinc cyanide
7783495	Zinc fluoride

SECTION III. WATER-RELATED CHEMICALS	
CAS Number	
557415	Zinc formate
7779864	Zinc hydrosulfite
7779886	Zinc nitrate
127822	Zinc phenolsulfonate
1314847	Zinc phosphide
16871719	Zinc silicofluoride
7733020	Zinc sulfate





State of Utah

Department of  
Environmental Quality

Dianne R. Nielson, Ph.D.  
*Executive Director*

DIVISION OF AIR QUALITY  
Richard W. Sprott  
*Director*

JON M. HUNTSMAN, JR.  
*Governor*

GARY HERBERT  
*Lieutenant Governor*

Site ID: 12902

## Title V Operating Permit

**PERMIT NUMBER: 500103001**

**DATE OF PERMIT: February 23, 2005**

**Date of Last Revision: February 23, 2005**

This Operating Permit is issued to, and applies to the following:

**Name of Permittee:**

City of Logan  
950 W 600 N  
Logan, UT 84321

**Permitted Location:**

Logan City Landfill  
Logan City Environmental Dept  
450 N 1000 W  
Logan, UT 84321

SIC code: 4953

## ABSTRACT

The City of Logan operates the Logan City Landfill, a municipal solid waste (MSW) landfill source located in Cache County, Utah. The facility accepts municipal and commercial waste. Logan City Landfill is a Title V source because 40 CFR 60 Subpart WWW and the Utah State Plan for MSW landfills (Subpart Cc) have required all landfills over 2.5 million megagrams to submit a Title V application. Logan City Landfill is subject to 40 CFR 60, Subpart A - General Provisions and to Subpart Cc - Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills. Logan City Landfill is also subject to Subpart M of the National Emission Standards for Hazardous Air Pollutants (NESHAP) - National Emission Standards for Asbestos: Standards for Active Waste Disposal Sites (40 CFR 61.154) as well as to Subpart A - General Provisions of the National Emission Standards for Hazardous Air Pollutants (NESHAP).

## UTAH AIR QUALITY BOARD

By:

Richard W. Sprott, Executive Secretary

Prepared By:

James Chapman

## Operating Permit History

2/23/2005 - Permit issued	Action initiated by an initial operating permit application	
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**Issued under authority of Utah Code Ann. Section 19-2-104 and 19-2-109.1, and in accordance with Utah Administrative Code R307-415 Operating Permit Requirements.**

All definitions, terms and abbreviations used in this permit conform to those used in Utah Administrative Code R307-101 and R307-415 (Rules), and 40 Code of Federal Regulations (CFR), except as otherwise defined in this permit. Unless noted otherwise, references cited in the permit conditions refer to the Rules.

Where a permit condition in Section I, General Provisions, partially recites or summarizes an applicable rule, the full text of the applicable portion of the rule shall govern interpretations of the requirements of the rule. In the case of a conflict between the Rules and the permit terms and conditions of Section II, Special Provisions, the permit terms and conditions of Section II shall govern except as noted in Provision I.M, Permit Shield.

### **Section I: General Provisions**

#### **I.A. Federal Enforcement.**

All terms and conditions in this permit, including those provisions designed to limit the potential to emit, are enforceable by the EPA and citizens under the Clean Air Act of 1990 (CAA) except those terms and conditions that are specifically designated as "State Requirements". (R307-415-6b)

#### **I.B. Permitted Activity(ies).**

Except as provided in R307-415-7b(1), the permittee may not operate except in compliance with this permit. (See also Provision I.E, Application Shield)

#### **I.C. Duty to Comply.**

- I.C.1 The permittee must comply with all conditions of the operating permit. Any permit noncompliance constitutes a violation of the Air Conservation Act and is grounds for any of the following: enforcement action; permit termination; revocation and reissuance; modification; or denial of a permit renewal application. (R307-415-6a(6)(a))
- I.C.2 It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. (R307-415-6a(6)(b))
- I.C.3 The permittee shall furnish to the Executive Secretary, within a reasonable time, any information that the Executive Secretary may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. Upon request, the permittee shall also furnish to the Executive Secretary copies of records required to be kept by this permit or, for information claimed to be confidential, the permittee may furnish such records directly to the EPA along with a claim of confidentiality. (R307-415-6a(6)(e))
- I.C.4 This permit may be modified, revoked, reopened, and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance shall not stay any permit condition, except as provided under R307-415-7f(1) for minor permit modifications. (R307-415-6a(6)(c))

**D. Permit Expiration and Renewal.**

- I.D.1        **This permit is issued for a fixed term of five years and expires on February 23, 2010.**  
(R307-415-6a(2))
- I.D.2        Application for renewal of this permit is due by August 23, 2009. An application may be submitted early for any reason. (R307-415-5a(1)(c))
- I.D.3        An application for renewal submitted after the due date listed in I.D.2 above shall be accepted for processing, but shall not be considered a timely application and shall not relieve the permittee of any enforcement actions resulting from submitting a late application. (R307-415-5a(5))
- I.D.4        Permit expiration terminates the permittee's right to operate unless a timely and complete renewal application is submitted consistent with R307-415-7b (see also Provision I.E, Application Shield) and R307-415-5a(1)(c) (see also Provision I.D.2). (R307-415-7c(2))

**I.E. Application Shield.**

If the permittee submits a timely and complete application for renewal, the permittee's failure to have an operating permit will not be a violation of R307-415, until the Executive Secretary takes final action on the permit renewal application. In such case, the terms and conditions of this permit shall remain in force until permit renewal or denial. This protection shall cease to apply if, subsequent to the completeness determination required pursuant to R307-415-7a(3), and as required by R307-415-5a(2), the applicant fails to submit by the deadline specified in writing by the Executive Secretary any additional information identified as being needed to process the application. (R307-415-7b(2))

**I.F. Severability.**

In the event of a challenge to any portion of this permit, or if any portion of this permit is held invalid, the remaining permit conditions remain valid and in force. (R307-415-6a(5))

**I.G. Permit Fee.**

- I.G.1        The permittee shall pay an annual emission fee to the Executive Secretary consistent with R307-415-9. (R307-415-6a(7))
- I.G.2        The emission fee shall be due on October 1 of each calendar year or 45 days after the source receives notice of the amount of the fee, whichever is later. (R307-415-9(4)(a))

**I.H. No Property Rights.**

This permit does not convey any property rights of any sort, or any exclusive privilege. (R307-415-6a(6)(d))

**I.I. Revision Exception.**

No permit revision shall be required, under any approved economic incentives, marketable permits, emissions trading and other similar programs or processes for changes that are provided for in this permit. (R307-415-6a(8))

**I.J. Inspection and Entry.**

I.J.1 Upon presentation of credentials and other documents as may be required by law, the permittee shall allow the Executive Secretary or an authorized representative to perform any of the following:

- I.J.1.a Enter upon the permittee's premises where the source is located or emissions related activity is conducted, or where records are kept under the conditions of this permit. (R307-415-6c(2)(a))
- I.J.1.b Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit. (R307-415-6c(2)(b))
- I.J.1.c Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practice, or operation regulated or required under this permit. (R307-415-6c(2)(c))
- I.J.1.d Sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with this permit or applicable requirements. (R307-415-6c(2)(d))
- I.J.2 Any claims of confidentiality made on the information obtained during an inspection shall be made pursuant to Utah Code Ann. Section 19-1-306. (R307-415-6c(2)(e))

I.K. **Certification.**

Any application form, report, or compliance certification submitted pursuant to this permit shall contain certification as to its truth, accuracy, and completeness, by a responsible official as defined in R307-415-3. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. (R307-415-5d)

I.L. **Compliance Certification.**

- I.L.1 Permittee shall submit to the Executive Secretary an annual compliance certification, certifying compliance with the terms and conditions contained in this permit, including emission limitations, standards, or work practices. This certification shall be submitted no later than **April 15, 2005** and that date each year following until this permit expires. The certification shall include all the following (permittee may cross-reference this permit or previous reports): (R307-415-6c(5))
  - I.L.1.a The identification of each term or condition of this permit that is the basis of the certification;
  - I.L.1.b The identification of the methods or other means used by the permittee for determining the compliance status with each term and condition during the certification period. Such methods and other means shall include, at a minimum, the monitoring and related recordkeeping and reporting requirements in this permit. If necessary, the permittee also shall identify any other material information that must be included in the certification to comply with section 113(c)(2) of the Act, which prohibits knowingly making a false certification or omitting material information;
  - I.L.1.c The status of compliance with the terms and conditions of the permit for the period covered by the certification, including whether compliance during the period was continuous or intermittent. The certification shall be based on the method or means

designated in Provision I.L.1.b. The certification shall identify each deviation and take it into account in the compliance certification. The certification shall also identify as possible exceptions to compliance any periods during which compliance is required and in which an excursion or exceedance as defined under 40 CFR Part 64 occurred; and

I.L.1.d Such other facts as the Executive Secretary may require to determine the compliance status.

I.L.2 The permittee shall also submit all compliance certifications to the EPA, Region VIII, at the following address or to such other address as may be required by the Executive Secretary: (R307-415-6c(5)(d))

Office of Enforcement, Compliance and Environmental Justice  
(mail code 8ENF)  
EPA, Region VIII  
999 18th Street, Suite 300  
Denver, CO 80202-2466

**I.M. Permit Shield.**

I.M.1 Compliance with the provisions of this permit shall be deemed compliance with any applicable requirements as of the date of this permit, provided that:

I.M.1.a Such applicable requirements are included and are specifically identified in this permit, or (R307-415-6f(1)(a))

I.M.1.b Those requirements not applicable to the source are specifically identified and listed in this permit. (R307-415-6f(1)(b))

I.M.2 Nothing in this permit shall alter or affect any of the following:

I.M.2.a The emergency provisions of Utah Code Ann. Section 19-1-202 and Section 19-2-112, and the provisions of the CAA Section 303. (R307-415-6f(3)(a))

I.M.2.b The liability of the owner or operator of the source for any violation of applicable requirements under Utah Code Ann. Section 19-2-107(2)(g) and Section 19-2-110 prior to or at the time of issuance of this permit. (R307-415-6f(3)(b))

I.M.2.c The applicable requirements of the Acid Rain Program, consistent with the CAA Section 408(a). (R307-415-6f(3)(c))

I.M.2.d The ability of the Executive Secretary to obtain information from the source under Utah Code Ann. Section 19-2-120, and the ability of the EPA to obtain information from the source under the CAA Section 114. (R307-415-6f(3)(d))

**I.N. Emergency Provision.**

I.N.1 An "emergency" is any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-

based emission limitation under this permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventive maintenance, careless or improper operation, or operator error. (R307-415-6g(1))

- I.N.2 An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the affirmative defense is demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:
- I.N.2.a An emergency occurred and the permittee can identify the causes of the emergency. (R307-415-6g(3)(a))
- I.N.2.b The permitted facility was at the time being properly operated. (R307-415-6g(3)(b))
- I.N.2.c During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in this permit. (R307-415-6g(3)(c))
- I.N.2.d The permittee submitted notice of the emergency to the Executive Secretary within two working days of the time when emission limitations were exceeded due to the emergency. This notice must contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken. This notice fulfills the requirement of Provision I.S.2.c below. (R307-415-6g(3)(d))

I.N.3 In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof. (R307-415-6g(4))

I.N.4 This emergency provision is in addition to any emergency or upset provision contained in any other section of this permit. (R307-415-6g(5))

**I.O. Operational Flexibility.**

Operational flexibility is governed by R307-415-7d(1).

**I.P. Off-permit Changes.**

Off-permit changes are governed by R307-415-7d(2).

**I.Q. Administrative Permit Amendments.**

Administrative permit amendments are governed by R307-415-7e.

**I.R. Permit Modifications.**

Permit modifications are governed by R307-415-7f.

**I.S. Records and Reporting.**

**I.S.1 Records.**

I.S.1.a The records of all required monitoring data and support information shall be retained by the permittee for a period of at least five years from the date of the monitoring sample,

measurement, report, or application. Support information includes all calibration and maintenance records, all original strip-charts or appropriate recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. (R307-415-6a(3)(b)(ii))

I.S.1.b For all monitoring requirements described in Section II, Special Provisions, the source shall record the following information, where applicable: (R307-415-6a(3)(b)(i))

I.S.1.b.1 The date, place as defined in this permit, and time of sampling or measurement.

I.S.1.b.2 The date analyses were performed.

I.S.1.b.3 The company or entity that performed the analyses.

I.S.1.b.4 The analytical techniques or methods used.

I.S.1.b.5 The results of such analyses.

I.S.1.b.6 The operating conditions as existing at the time of sampling or measurement.

I.S.1.c Additional record keeping requirements, if any, are described in Section II, Special Provisions.

I.S.2 Reports.

I.S.2.a Monitoring reports shall be submitted to the Executive Secretary every six months, or more frequently if specified in Section II. All instances of deviation from permit requirements shall be clearly identified in the reports. (R307-415-6a(3)(c)(i))

I.S.2.b All reports submitted pursuant to Provision I.S.2.a shall be certified by a responsible official in accordance with Provision I.K of this permit. (R307-415-6a(3)(c)(i))

I.S.2.c The Executive Secretary shall be notified promptly of any deviations from permit requirements including those attributable to upset conditions as defined in this permit, the probable cause of such deviations, and any corrective actions or preventative measures taken. **Prompt, as used in this condition, shall be defined as written notification within 14 days.** Deviations from permit requirements due to unavoidable breakdowns shall be reported in accordance with the provisions of R307-107. (R307-415-6a(3)(c)(ii))

I.S.3 Notification Addresses.

I.S.3.a All reports, notifications, or other submissions required by this permit to be submitted to the Executive Secretary are to be sent to the following address or to such other address as may be required by the Executive Secretary:

Utah Division of Air Quality  
P.O. Box 144820  
Salt Lake City, UT 84114-4820  
Phone: 801-536-4000

S.3.b

All reports, notifications or other submissions required by this permit to be submitted to the EPA should be sent to one of the following addresses or to such other address as may be required by the Executive Secretary:

For annual compliance certifications

Environmental Protection Agency, Region VIII  
Office of Enforcement, Compliance and  
Environmental Justice (mail code 8ENF)  
999 18th Street, Suite 300  
Denver, CO 80202-2466

For reports, notifications, or other correspondence  
related to permit modifications, applications, etc.

Environmental Protection Agency, Region VIII  
Office of Partnerships & Regulatory Assistance  
Air & Radiation Program (mail code 8P-AR)  
999 18th Street, Suite 300  
Denver, CO 80202-2466  
Phone: 303-312-6440

**I.T. Reopening for Cause.**

**I.T.1** A permit shall be reopened and revised under any of the following circumstances:

**I.T.1.a** New applicable requirements become applicable to the permittee and there is a remaining permit term of three or more years. No such reopening is required if the effective date of the requirement is later than the date on which this permit is due to expire, unless the terms and conditions of this permit have been extended pursuant to R307-415-7c(3), application shield. (R307-415-7g(1)(a))

**I.T.1.b** The Executive Secretary or EPA determines that this permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of this permit. (R307-415-7g(1)(c))

**I.T.1.c** EPA or the Executive Secretary determines that this permit must be revised or revoked to assure compliance with applicable requirements. (R307-415-7g(1)(d))

**I.T.1.d** Additional applicable requirements are to become effective before the renewal date of this permit and are in conflict with existing permit conditions. (R307-415-7g(1)(e))

**I.T.2** Proceedings to reopen and issue a permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of this permit for which cause to reopen exists. (R307-415-7g(2))

**I.U. Inventory Requirements.**

Emission inventories shall be submitted in accordance with the procedures of R307-150, Emission Inventories. (R307-150)

## **Section II: SPECIAL PROVISIONS**

### **II.A. Emission Unit(s) Permitted to Discharge Air Contaminants.**

(R307-415-4(3)(a) and R307-415-4(4))

#### **II.A.1 Logan City Landfill (designated as Landfill)**

Unit Description: Approximately 85 acre Municipal Solid Waste (MSW) Landfill.

#### **II.A.2 Fuel Tanks (designated as Misc Tanks)**

Unit Description: Four above ground storage tanks. 3000 gallon or less containing Diesel Fuel and Used Oil. No unit-specific applicable requirements.

#### **II.A.3 Space Heater (designated as Furnace)**

Unit Description: Maintenance shop oil heater. Burns used oil. No unit-specific applicable requirements.

### **II.B. Requirements and limitations.**

The following emission limitations, standards, and operational limitations apply to the permitted facility as indicated: (R307-415-6a(1))

#### **II.B.1 Conditions on permitted source (Source-wide)**

##### **II.B.1.a Condition:**

Sulfur content of any fuel oil burned shall be no greater than 0.85 lb/MMBtu heat input. [Authority granted under R307-203-1; condition originated in R307-203]

##### **II.B.1.a.1**

##### **Monitoring:**

For each delivery of oil, the permittee shall either:

(1) Determine the fuel sulfur content expressed as lb/MMBtu in accordance with the methods of the American Society for Testing Materials (ASTM) and Equation 1;

(2) Inspect the fuel sulfur content expressed as lb/MMBtu determined by the vendor using methods of the ASTM and Equation 1; or

(3) Inspect documentation provided by the vendor that indirectly demonstrates compliance with this provision.

Equation 1:

Fuel Sulfur Content, lb/MMBtu = [(Weight percent sulfur/100) x Density (lb/gal)] / [(gross heating value (Btu/gal)) x (1 MMBtu/1,000,000 Btu)]

##### **II.B.1.a.2**

##### **Recordkeeping:**

Results of monitoring shall be maintained in accordance with Provision I.S.1 of this permit.

##### **II.B.1.a.3**

##### **Reporting:**

There are no reporting requirements for this provision except those specified in Section I of this permit.

.B.1.b

**Condition:**

Visible emissions shall be no greater than 20 percent opacity. [Authority granted under R307-201-1(1); condition originated in R307-201]

II.B.1.b.1

**Monitoring:**

*acted upon, influenced*  
A

A visual opacity survey of each affected emission unit shall be performed on a quarterly basis by an individual trained on the observation procedures of 40 CFR 60, Appendix A, Method 9. If visible emissions other than condensed water vapor are observed from an emission unit, an opacity determination of that emission unit shall be performed by a certified observer within 24 hours of the initial survey. The opacity determination shall be performed in accordance with 40 CFR 60, Appendix A, Method 9 for point sources, and in accordance 58 FR 61640 Method 203A for fugitive sources.

II.B.1.b.2

**Recordkeeping:**

The permittee shall record the date of each visual opacity survey and keep a list of the emission points checked during the visual opacity survey. The permittee shall also keep a log of the following information for each observed visual emission: date and time visual emissions observed, emission point location and description, time and date of opacity test, and percent opacity. The records required by this provision and all data required by 40 CFR 60, Appendix A, Method 9 shall be maintained in accordance with Provision I.S.1 of this permit.

II.B.1.b.3

**Reporting:**

There are no reporting requirements for this provision except those specified in Section I of this permit.

II.B.2

**Conditions on Logan City Landfill ( Landfill)**

II.B.2.a

**Condition:**

(a) The permittee shall calculate a nonmethane organic compounds (NMOC) emission rate for the landfill using the procedures specified in monitoring. The NMOC emission rate shall be recalculated annually, except as provided in paragraph (b)(1)(i) of reporting.

(1) If the calculated NMOC emission rate is less than 50 megagrams per year, the permittee shall:

(i) Submit an annual emission report to the Executive Secretary, except as provided for in paragraph (b)(1)(i) of reporting; and

(ii) Recalculate the NMOC emission rate annually using the procedures specified in (a) of monitoring until such time as the calculated NMOC emission rate is equal to or greater than 50 megagrams per year, or the landfill is closed.

(A) If the NMOC emission rate, upon recalculation required in paragraph (a)(1)(ii), is equal to or greater than 50 megagrams per year, the permittee shall install a collection and control system in compliance with 40 CFR 60.752(b)(2).

(B) If the landfill is permanently closed, a closure notification shall be submitted to the Executive Secretary as provided for in (d) of reporting.

(2) If the calculated NMOC emission rate is equal to or greater than 50 megagrams per year, the permittee shall:

(i) Submit a collection and control system design plan prepared by a professional engineer to the Executive Secretary within 1 year:

(A) The collection and control system as described in the plan shall meet the design requirements of paragraph 40 CFR 60.752(b)(2)(ii).

(B) The collection and control system design plan shall include any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping or reporting provisions of 40 CFR 60.753 through 60.758 proposed by the permittee.

(C) The collection and control system design plan shall either conform with specifications for active collection systems in 40 CFR 60.759 or include a demonstration to the Executive Secretary's satisfaction of the sufficiency of the alternative provisions to 40 CFR 60.759.

(ii) The permittee shall install a collection and control system capable of meeting emissions standards in R307-221 within 30 months of the date when the landfill has an emission rate of NMOC of 50 megagrams per year or more.

(b) When the MSW landfill is closed, the permittee is no longer subject to the requirement to maintain an operating permit under 40 CFR 70 for the landfill if the landfill is not otherwise subject to the requirements of either 40 CFR 70 and if either of the following conditions are met:

(1) The landfill was never subject to the requirement for a control system under paragraph (a)(2); or

(2) The permittee meets the conditions for control system removal specified in 40 CFR 60.752(b)(2)(v). [40 CFR 60.752(d), R307-221] [Authority granted under R307-221; condition originated in R307-221]

#### II.B.2.a.1

##### **Monitoring:**

The permittee shall monitor the NMOC emission rate by using the equations in (a) and following the three tier process outlined in (b), (c), and (d).

(a) The permittee shall calculate the NMOC emission rate using either the equation provided in paragraph (a)(1) or the equation provided in paragraph (a)(2). Both equations may be used if the actual year-to-year solid waste acceptance rate is known, as specified in paragraph (a)(1) for part of the life of the landfill and the actual year-to-year solid waste acceptance rate is unknown, as specified in paragraph (a)(2), for part of the life of the landfill. The values to be used in both equations are 0.05 per year for  $k$ , 170 cubic meters per megagram for  $L_0$ , and 4,000 parts per million by volume as hexane for the  $C_{NMOC}$ . For landfills located in geographical areas with a thirty-year annual average precipitation of less than 25 inches, as measured at the nearest representative official meteorological site, the  $k$  value to be used is 0.02 per year.

(1) The following equation shall be used if the actual year-to-year solid waste acceptance rate is known.

$$M_{\text{NMOC}} = \text{Sum } (2 k L_o M_i (e^{-kt_i})(C_{\text{NMOC}})(3.6 \times 10^{-9})) \text{ of } i \text{ through } n$$

where,

$M_{\text{NMOC}}$ =Total NMOC emission rate from the landfill, megagrams per year

$k$ =methane generation rate constant, per year

$L_o$ =methane generation potential, cubic meters per megagram solid waste

$M_i$ =mass of solid waste in the  $i^{\text{th}}$  section, megagrams

$t_i$ =age of the  $i^{\text{th}}$  section, years

$C_{\text{NMOC}}$ =concentration of NMOC, parts per million by volume as hexane

$3.6 \times 10^{-9}$ =conversion factor

The mass of nondegradable solid waste may be subtracted from the total mass of solid waste in a particular section of the landfill when calculating the value for  $M_i$  if documentation of the nature and amount of such wastes is maintained.

(2) The following equation shall be used if the actual year-to-year solid waste acceptance rate is unknown.

$$M_{\text{NMOC}} = 2L_o R (e^{-kc} - e^{-kt}) (C_{\text{NMOC}}) (3.6 \times 10^{-9})$$

Where:

$M_{\text{NMOC}}$ =mass emission rate of NMOC, megagrams per year

$L_o$ =methane generation potential, cubic meters per megagram solid waste

$R$ =average annual acceptance rate, megagrams per year

$k$ =methane generation rate constant, per year

$t$  = age of landfill, years

$C_{\text{NMOC}}$ =concentration of NMOC, parts per million by volume as hexane

$c$ =time since closure, years; for active landfill  $c=0$  and  $e^{-kc}=1$

$3.6 \times 10^{-9}$ =conversion factor

The mass of nondegradable solid waste may be subtracted from the total mass of solid waste in a particular section of the landfill when calculating the value of  $R$ , if documentation of the nature and amount of such wastes is maintained.

(b) Tier 1. The permittee shall compare the calculated NMOC mass emission rate to the standard of 50 megagrams per year.

(1) If the NMOC emission rate calculated in (a) is less than 50 megagrams per year, then the permittee shall submit an emission rate report as provided in paragraph (b)(1) of reporting, and shall recalculate the NMOC mass emission rate annually as required under paragraph (a)(1) of this condition.

(2) If the calculated NMOC emission rate is equal to or greater than 50 megagrams per year, then the permittee shall either comply with paragraph (a)(2) of this condition, or determine a site-specific NMOC concentration and recalculate the NMOC emission rate using the procedures provided in (c).

(c) Tier 2. The permittee shall determine the NMOC concentration using the following sampling procedure. The permittee shall install at least two sample probes per hectare of landfill surface that has retained waste for at least 2 years. If the landfill is larger than 25 hectares in area, only 50 samples are required. The sample probes should be located to avoid known areas of nondegradable solid waste. The permittee shall collect and analyze one sample of landfill gas from each probe to determine the NMOC concentration using Method 25 or 25C of Appendix A of 40 CFR 60. Method 18 of Appendix A of 40 CFR 60 may be used to analyze the samples collected by the Method 25 or 25C sampling procedure. Taking composite samples from different probes into a single cylinder is allowed; however, equal sample volumes must be taken from each probe. For each composite, the sampling rate, collection times, beginning and ending cylinder vacuums, or alternative volume measurements must be recorded to verify that composite volumes are equal. Composite sample volumes should not be less than one liter unless evidence can be provided to substantiate the accuracy of smaller volumes. Terminate compositing before the cylinder approaches ambient pressure where measurement accuracy diminishes. If using Method 18, the permittee must identify all compounds in the sample and, as a minimum, test for those compounds published in the most recent Compilation of Air Pollutant Emission Factors (AP-42), minus carbon monoxide, hydrogen sulfide, and mercury. As a minimum, the instrument must be calibrated for each of the compounds on the list. Convert the concentration of each Method 18 compound to  $C_{\text{NMOC}}$  as hexane by multiplying by the ratio of its carbon atoms divided by six. If more than the required number of samples are taken, all samples must be used in the analysis. The permittee must divide the NMOC concentration from Method 25 or 25C of Appendix A of 40 CFR 60 by six to convert from  $C_{\text{NMOC}}$  as carbon to  $C_{\text{NMOC}}$  as hexane. If the landfill has an active or passive gas removal system in place, Method 25 or 25C samples may be collected from these systems instead of surface probes provided the removal system can be shown to provide sampling as representative as the two sampling probe per hectare requirement. For active collection systems, samples may be collected from the common header pipe before the gas moving or condensate removal equipment. For these systems, a minimum of three samples must be collected from the header pipe.

(1) The permittee shall recalculate the NMOC mass emission rate using the equations provided in (a) and using the average NMOC concentration from the collected samples instead of the default value in the equations provided in (a).

(2) If the resulting mass emission rate calculated using the site-specific NMOC concentration is equal to or greater than 50 megagrams per year, then the permittee shall either comply with paragraph (a)(2) of this condition, or determine the site-specific methane generation rate constant and recalculate the NMOC emission rate using the site-specific methane generation rate using the procedure specified in (d).

(3) If the resulting NMOC mass emission rate is less than 50 megagrams per year, the permittee shall submit a periodic estimate of the emission rate report as provided in paragraph (b)(1) of reporting and retest the site-specific NMOC concentration every 5 years using the methods specified in monitoring.

(d) Tier 3. The site-specific methane generation rate constant shall be determined using the procedures provided in Method 2E of appendix A of 40 CFR 60. The permittee shall estimate the NMOC mass emission rate using equations in (a) and

using a site-specific methane generation rate constant  $k$ , and the site-specific NMOC concentration as determined in (c) instead of the default values provided in (a). The permittee shall compare the resulting NMOC mass emission rate to the standard of 50 megagrams per year.

(1) If the NMOC mass emission rate as calculated using the site-specific methane generation rate and concentration of NMOC is equal to or greater than 50 megagrams per year, the permittee shall comply with paragraph (a)(2) of this condition.

(2) If the NMOC mass emission rate is less than 50 megagrams per year, then the permittee shall submit a periodic emission rate report as provided in paragraph (b)(1) of reporting and shall recalculate the NMOC mass emission rate annually, as provided in paragraph (a)(1) of reporting using the equations in (a) and using the site-specific methane generation rate constant and NMOC concentration obtained in (c). The calculation of the methane generation rate constant is performed only once, and the value obtained from this test shall be used in all subsequent annual NMOC emission rate calculations.

#### II.B.2.a.2

##### **Recordkeeping:**

(a) Except as provided in paragraph (a)(2)(i)(B) of this condition when subject to (a) of this condition, the permittee shall keep for at least 5 years up-to-date, readily accessible, on-site records of the design capacity report which triggered (a) of this condition, the current amount of solid waste in-place, and the year-by-year waste acceptance rate. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable.

(b) Results of monitoring shall also be maintained in accordance with provision I.S.1 of this permit.

#### II.B.2.a.3

##### **Reporting:**

Except as provided in paragraph (a)(2)(i)(B) of this condition,

(a) An amended design capacity report shall be submitted to the Executive Secretary providing notification of any increase in the design capacity of the landfill, whether the increase results from an increase in the permitted area or depth of the landfill, a change in the operating procedures, or any other means which results in an increase in the maximum design capacity of the landfill. The amended design capacity report shall be submitted within 90 days of the earliest of the following events:

- (1) the issuance of an amended operating permit;
- (2) submittal of application for a solid waste permit under R315-310; or
- (3) the change in operating procedures which will result in an increase in design capacity.

(b) The permittee shall submit an NMOC emission rate report to the Executive Secretary initially and annually thereafter, except as provided for in paragraph (b)(1)(i). The Executive Secretary may request such additional information as may be necessary to verify the reported NMOC emission rate.

(1) The NMOC emission rate report shall contain an annual or 5-year estimate of the NMOC emission rate calculated using the formula and procedures provided in monitoring.

(i) If the estimated NMOC emission rate as reported in the annual report to the Executive Secretary is less than 50 megagrams per year in each of the next 5 consecutive years, the permittee may elect to submit an estimate of the NMOC emission rate for the next 5-year period in lieu of the annual report. This estimate shall include the current amount of solid waste-in-place and the estimated waste acceptance rate for each year of the 5 years for which an NMOC emission rate is estimated. All data and calculations upon which this estimate is based shall be provided to the Executive Secretary. This estimate shall be revised at least once every 5 years. If the actual waste acceptance rate exceeds the estimated waste acceptance rate in any year reported in the 5-year estimate, a revised 5-year estimate shall be submitted to the Executive Secretary. The revised estimate shall cover the 5-year period beginning with the year in which the actual waste acceptance rate exceeded the estimated waste acceptance rate.

(2) The NMOC emission rate report shall include all the data, calculations, sample reports and measurements used to estimate the annual or 5-year emissions.

(c) Each permittee subject to the provisions of paragraph (a)(2)(i) of this condition shall submit a collection and control system design plan to the Executive Secretary within 1 year of the first report required under (b) in which the emission rate equals or exceeds 50 megagrams per year, except as follows:

(1) If the permittee elects to recalculate the NMOC emission rate after Tier 2 NMOC sampling and analysis as provided in (c) of monitoring and the resulting rate is less than 50 megagrams per year, annual periodic reporting shall be resumed, using the Tier 2 determined site-specific NMOC concentration, until the calculated emission rate is equal to or greater than 50 megagrams per year or the landfill is closed. The revised NMOC emission rate report, with the recalculated emission rate based on NMOC sampling and analysis, shall be submitted within 180 days of the first calculated exceedance of 50 megagrams per year.

(2) If the permittee elects to recalculate the NMOC emission rate after determining a site-specific methane generation rate constant ( $k$ ), as provided in Tier 3 in (d) of monitoring, and the resulting NMOC emission rate is less than 50 Mg/yr, annual periodic reporting shall be resumed. The resulting site-specific methane generation rate constant ( $k$ ) shall be used in the emission rate calculation until such time as the emissions rate calculation results in an exceedance. The revised NMOC emission rate report based on the provisions of (d) of monitoring and the resulting site-specific methane generation rate constant ( $k$ ) shall be submitted to the Executive Secretary within 1 year of the first calculated emission rate exceeding 50 megagrams per year.

(d) Each permittee of a landfill shall submit a closure report to the Executive Secretary within 30 days of waste acceptance cessation. The Executive Secretary may request additional information as may be necessary to verify that permanent closure has taken place in accordance with the requirements of 40 CFR 258.60. If a closure report has been submitted to the Executive Secretary, no additional wastes may be placed into the landfill without filing a notification of modification as described under 40 CFR 60.7(a)(4).

(e) The permittee shall notify the Executive Secretary of the awarding of contracts for the construction of the collection and control system or the order to purchase components for the system. This notification shall be submitted within 18 months after reporting an NMOC emission equal to or greater than 50 megagrams per year. [R307-221-5(4), R307-221]

(f) The permittee shall also comply with the reporting requirements of Section I of this permit.

#### II.B.2.b

##### **Condition:**

The permittee shall meet one of the following requirements for all asbestos disposal operations at the landfill:

- (a) there shall be no visible emissions to the outside air from any active waste disposal site where asbestos-containing waste material has been deposited,
- (b) at the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the asbestos-containing waste material that has been deposited at the site during the operating day or previous 24-hour period shall:
  - (1) be covered with at least 15 centimeters (6 inches) of compacted nonasbestos-containing material, or
  - (2) be covered with a resinous or petroleum-based dust suppression agent that effectively binds dust and controls wind erosion. Such an agent shall be used in the manner and frequency recommended for the particular dust by the dust suppression agent manufacturer to achieve and maintain dust control. Other equally effective dust suppression agents may be used upon prior approval by the Executive Secretary. For purposes of this paragraph, any used, spent, or other waste oil is not considered a dust suppression agent.
- (c) use an alternative emissions control method that has received prior written approval by the U.S. Environmental Protection Agency (USEPA) according to the procedures described in 40 CFR 61.149(c)(2). [Authority granted under 40 CFR 61.154; condition originated in 40 CFR 61.154]

#### II.B.2.b.1

##### **Monitoring:**

If the permittee chooses to comply with the no visible emissions provisions of this condition, a visual opacity observation of each active asbestos disposal site shall be performed on a daily basis in accordance with 58 FR 61640 Method 203C.

If the permittee chooses to comply with the daily cover provisions of this condition, a visual inspection of the site(s) where asbestos containing waste material is deposited shall be conducted daily to verify compliance with this condition.

II.B.2.b.2

**Recordkeeping:**

If the permittee chooses to comply with the no visible emissions provisions of this condition, a log of the visual opacity observations shall be maintained as described in Provision S.1 in Section I of this permit. All data required by 40 CFR 60, Appendix A, Method 9 or 58 FR 61640, Method 203C shall also be maintained as described in Provision S.1 in Section I of this permit.

If the permittee chooses to comply with the daily cover provisions of this condition, results of daily visual inspections shall be recorded in a log and maintained as described in Provision S.1 in Section I of this permit.

II.B.2.b.3

**Reporting:**

There are no reporting requirements for this provision except those specified in Section I of this permit.

II.B.2.c

**Condition:**

Upon closure of an asbestos-containing waste disposal site, the permittee shall submit a copy of records of asbestos waste disposal locations and quantities and shall:

(a) Comply with one of the following:

- (1) Either discharge no visible emissions to the outside air from an inactive asbestos-containing waste disposal site or
- (2) Cover the asbestos-containing waste material with at least 15 centimeters (6 inches) of compacted nonasbestos-containing material, and grow and maintain a cover of vegetation on the area adequate to prevent exposure of the asbestos-containing waste material. In desert areas where vegetation would be difficult to maintain, at least 8 additional centimeters (3 inches) of well-graded, nonasbestos crushed rock may be placed on top of the final cover instead of vegetation and maintained to prevent emissions; or
- (3) Cover the asbestos-containing waste material with at least 60 centimeters (2 feet) of compacted nonasbestos-containing material, and maintain it to prevent exposure of the asbestos-containing waste; or
- (4) For inactive waste disposal sites for asbestos tailings, a resinous or petroleum-based dust suppression agent that effectively binds dust to control surface air emissions may be used instead of the methods in paragraphs (a) (1), (2), and (3) of this section. Use the agent in the manner and frequency recommended for the particular asbestos tailings by the manufacturer of the dust suppression agent to achieve and maintain dust control. Obtain prior written approval of USEPA to use

other equally effective dust suppression agents. For purposes of this paragraph, any used, spent, or other waste oil is not considered a dust suppression agent.

- (b) Unless a natural barrier adequately deters access by the general public, install and maintain warning signs and fencing as follows, or comply with paragraph (a)(2) or (a)(3) of this condition:
- (1) Display warning signs at all entrances and at intervals of 100 m (328 ft) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material was deposited. The warning signs must:
- (i) Be posted in such a manner and location that a person can easily read the legend; and
  - (ii) Conform to the requirements for 51 cm×36 cm (20"×14") upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph; and
  - (iii) Display the following legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in this paragraph.

Legend	Notation
Asbestos Waste Disposal Site	2.5 cm (1 inch) Sans Serif, Gothic or Block
Do Not Create Dust	1.9 cm (3/4 inch) Sans Serif, Gothic or Block
Breathing Asbestos is Hazardous to Your Health	14 Point Gothic

Spacing between any two lines must be at least equal to the height of the upper of the two lines.

- (2) Fence the perimeter of the site in a manner adequate to deter access by the general public.
- (3) When requesting a determination on whether a natural barrier adequately deters public access, supply information enabling the Administrator to determine whether a fence or a natural barrier adequately deters access by the general public.

- (c) In lieu of complying with the requirements of paragraph (a) or (b) of this condition, the permittee may use an alternative control method that has received prior approval of the USEPA. [Authority granted under 40 CFR 61.154 (g); condition originated in 40 CFR 61.151]

II.B.2.c.1

**Monitoring:**

A visual inspection of each closed site where asbestos-containing waste material is deposited shall be conducted quarterly to verify compliance with all the requirements of 40 CFR 61.151

II.B.2.c.2

**Recordkeeping:**

Results of all inspections shall be recorded in a log and maintained as described in Provision S.1 in Section I of this permit

II.B.2.c.3

**Reporting:**

- (a) Notify the Executive Secretary in writing at least 45 days prior to excavating or otherwise disturbing any asbestos-containing waste material that has been deposited at a waste disposal site and is covered. If the excavation will begin on a date other than the one contained in the original notice, notice of the new start date must be provided to the Executive Secretary at least 10 working days before excavation begins and in no event shall excavation begin earlier than the date specified in the original notification. Include the following information in the notice:

- (1) Scheduled starting and completion dates.
- (2) Reason for disturbing the waste.
- (3) Procedures to be used to control emissions during the excavation, storage, transport, and ultimate disposal of the excavated asbestos-containing waste material. If deemed necessary, the Executive Secretary may require changes in the emission control procedures to be used.
- (4) Location of any temporary storage site and the final disposal site.

- (b) Within 60 days of a site becoming inactive and after the effective date of this subpart, record, in accordance with State law, a notation on the deed to the facility property and on any other instrument that would normally be examined during a title search; this notation will in perpetuity notify any potential purchaser of the property that:

- (1) The land has been used for the disposal of asbestos-containing waste material;

- (2) The survey plot and record of the location and quantity of asbestos-containing waste disposed of within the disposal site required in 40 CFR 61.154(f) have been filed with the USEPA; and
- (3) The site is subject to 40 CFR 61, Subpart M.

II.B.2.d

**Condition:**

The permittee shall maintain waste shipment records of all asbestos-containing waste material received. In addition to routine shipment-tracking information, the waste shipment records shall document instances of improperly enclosed or uncovered waste, or any asbestos-containing waste material not sealed in leak-tight containers. [Authority granted under 40 CFR 61.154 (e); condition originated in 40 CFR 61.154]

II.B.2.d.1

**Monitoring:**

Records required for this permit condition will serve as monitoring.

II.B.2.d.2

**Recordkeeping:**

Maintain, records of the location, depth and area, and quantity in cubic meters (cubic yards) of asbestos-containing waste material within the disposal site on a map or diagram of the disposal area. All Records shall be maintained as described in Provisions I.S.1 of this permit

II.B.2.d.3

**Reporting:**

There are no reporting requirements for this provision except those specified in Section I of this permit.

I.B.2.e

**Condition:**

Unless a natural barrier adequately deters access by the general public, the permittee shall comply with one of the following:

- (a) the fencing and warning sign requirements of 40 CFR 61.154 (b), or
- (b) at the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the asbestos-containing waste material that has been deposited at the site during the operating day or previous 24-hour period shall be covered with at least 15 centimeters (6 inches) of compacted nonasbestos-containing material. [Authority granted under 40 CFR 61.154; condition originated in 40 CFR 61.154]

II.B.2.e.1

**Monitoring:**

If the permittee chooses to comply with the fencing and warning sign provisions of this condition, a visual inspection of the property line including all entrances to the site and/or sections of the site where asbestos containing waste material is deposited shall be conducted quarterly to verify compliance with the fencing and warning sign requirements of 40 CFR 61.154 (b)

If the permittee chooses to comply with the daily cover provisions of this condition, a visual inspection of the site(s) where asbestos containing waste material is deposited shall be conducted daily to verify compliance with this condition.

II.B.2.e.2

**Recordkeeping:**

Results of all inspections shall be recorded in a log and maintained as described in Provision S.1 in Section I of this permit.

II.B.2.e.3

**Reporting:**

There are no reporting requirements for this provision except those specified in Section I of this permit.

II.B.2.f

**Condition:**

The permittee shall maintain, until closure, records of the location, depth and area, and quantity in cubic meters (cubic yards) of asbestos-containing waste material within the disposal site on a map or diagram of the disposal area. [Authority granted under 40 CFR 61.154 (f); condition originated in 40 CFR 61.154]

II.B.2.f.1

**Monitoring:**

Records required for this permit condition will serve as monitoring.

II.B.2.f.2

**Recordkeeping:**

Maintain, records of the location, depth and area, and quantity in cubic meters (cubic yards) of asbestos-containing waste material within the disposal site on a map or diagram of the disposal area. All Records shall be maintained as described in Provisions I.S.1 of this permit

II.B.2.f.3

**Reporting:**

Notify the Executive Secretary in writing at least 45 days prior to excavating or otherwise disturbing any asbestos-containing waste material that has been deposited at a waste disposal site and is covered. If the excavation will begin on a date other than the one contained in the original notice, notice of the new start date must be provided to the Executive Secretary at least 10 working days before excavation begins and in no event shall excavation begin earlier than the date specified in the original notification. Include the following information in the notice:

- (1) Scheduled starting and completion dates.
- (2) Reason for disturbing the waste.
- (3) Procedures to be used to control emissions during the excavation, storage, transport, and ultimate disposal of the excavated asbestos-containing waste material. If deemed necessary, the Executive Secretary may require changes in the emission control procedures to be used.
- (4) Location of any temporary storage site and the final disposal site.

All reports shall be in accordance with Provision I.S.2 of this permit.

II.C. **Emissions Trading.**  
(R307-415-6a(10))

Not applicable to this source.

II.D.

**Alternative Operating Scenarios.**

(R307-415-6a(9))

Not applicable to this source.

**Section III: PERMIT SHIELD**

A permit shield was not granted for any specific requirements.

**Section IV: ACID RAIN PROVISIONS.**

**This source is not subject to Title IV. This section is not applicable.**

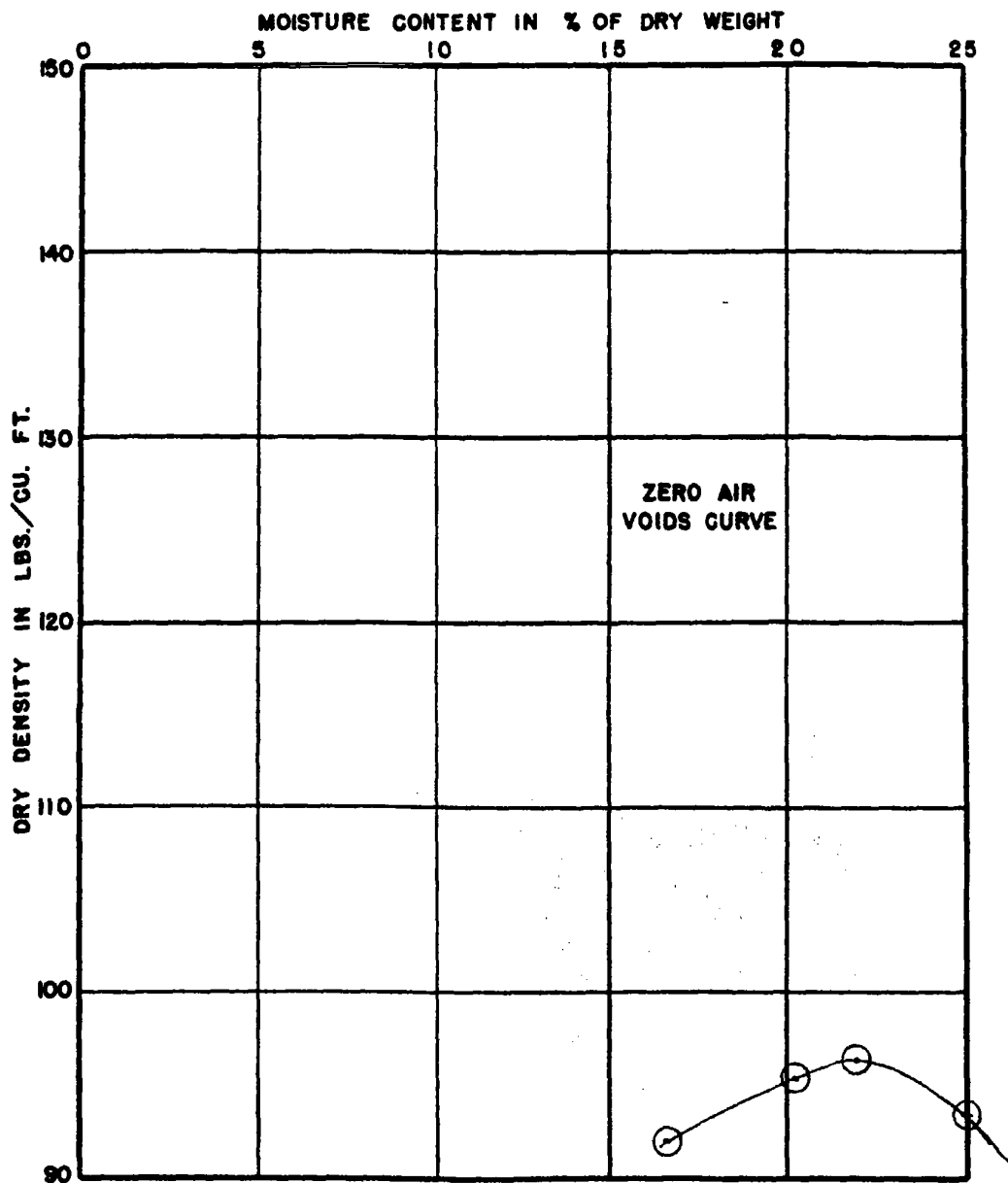
## REVIEWER COMMENTS

1. **Comment on an item originating in 40 CFR 60.154 regarding Logan City Landfill (Unit Landfill)**

Definition of "Significant Amount": A significant amount of improperly enclosed or uncovered waste is hereby defined as one cubic meter of asbestos-containing waste material. Based on EPA standard conversion factors for typical asbestos-waste containers, one cubic meter of waste material is approximately equal to 9.8 drums or barrels (35 gallons each) or 17.4 plastic bags. [Comment last updated on 11/03/2004]



SAMPLE NO. \_\_\_\_\_ DEPTH \_\_\_\_\_ ELEVATION \_\_\_\_\_  
 SOIL CL  
 LOCATION LOGAN LANDFILL  
 OPTIMUM MOISTURE CONTENT \_\_\_\_\_ 22%  
 MAXIMUM DRY DENSITY \_\_\_\_\_ 96.3  
 METHOD OF COMPACTION ASTM D698 PROC A



COMPACTION TEST DATA

Dames & Moore

PLATE

FILE \_\_\_\_\_ BY SC-1 DATE 9/14/95 CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_

## COMPACTION TEST DATA

PAGE NO. \_\_\_\_\_ OF \_\_\_\_\_

## Dames &amp; Moore

Job No. 30798-001 Client MONTGOMERY WATSON Sample \_\_\_\_\_ Depth \_\_\_\_\_  
 Location LOGAN LANDFILL Sampled \_\_\_\_\_ By \_\_\_\_\_  
 Soil CL Passing 1/4" \_\_\_\_\_ % Sp. Gr. \_\_\_\_\_  
 Tested 9/12/95 By EC Computed 9/14/95 By EC Checked \_\_\_\_\_ By \_\_\_\_\_

TYPE OF COMPACTION	CYLINDER CU. FT.	RAMMER LBS.	DROP INCHES	LAYERS	BLOWS PER LAYER
<input type="checkbox"/> ASTM D1557	1/30	10	18	5	25
<input type="checkbox"/> ASTM D1557	1/13.33	10	18	5	56
<input checked="" type="checkbox"/> ASTM D698 <u>PROC A</u>	1/30	5 1/2	12	3	25
<input type="checkbox"/>					

POINT NO.	PENETROMETER		WT. OF MOLD & SOIL MOLD WT.	WET DENSITY IN LBS./ CU.FT.	MOISTURE DETERMINATION				DRY DENSITY IN LBS./ CU.FT.
	NEEDLE SIZE	RESISTANCE READING			DISH NO.	WET WT. -DRY WT.	DRY WT. -DISH WT.	% MOISTURE	
		RESISTANCE LBS./SQ.IN.				MOISTURE WT.	DRY SOIL WT.		
+ 6%			13.06 9.48	107.4	169	682.8 600.5	108.5	16.7	92.0
+ 10%			13.31 9.48	114.9	318	619.9 534.2	112.5	20.3	95.5
+ 12%			13.40 9.48	117.6	95	684.8 580.6	109.1	22.1	96.3
+ 14%			13.37 9.48	116.7	300	599.7 503.0	116.5	25.0	93.4
Ag ic 9/12					62	915.3 856.6	218.5	9.2	

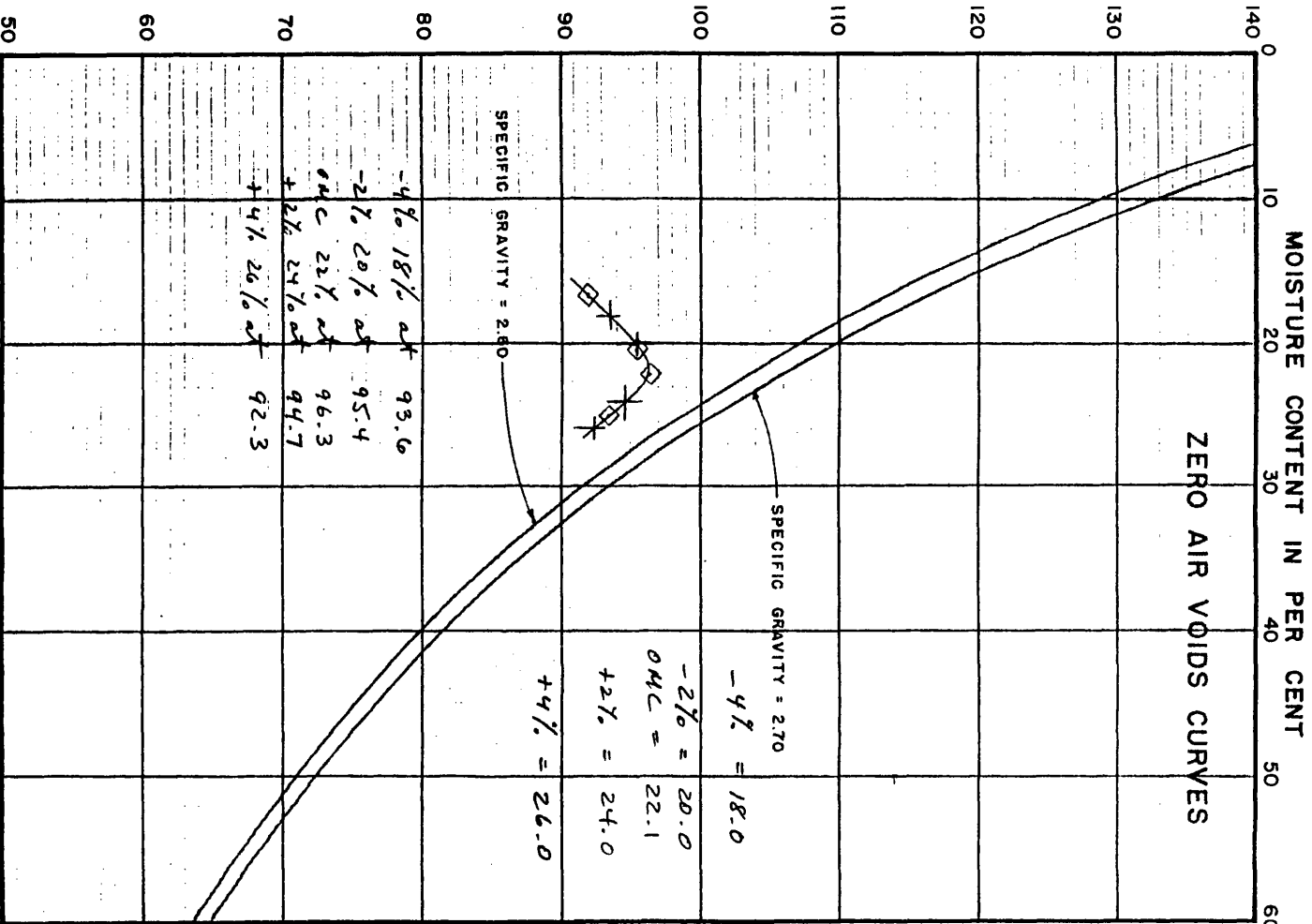
REVISIONS

BY \_\_\_\_\_ DATE \_\_\_\_\_ TO EO \_\_\_\_\_

BY \_\_\_\_\_ DATE \_\_\_\_\_ TO EO \_\_\_\_\_

BY EG DATE 9/14/95  
 CHECKED BY \_\_\_\_\_  
 COPY TO EO \_\_\_\_\_

DRY DENSITY IN LBS. / CU. FT.





$$K = \frac{aL}{A\Delta t} \quad \text{in} \quad \frac{h_1}{h_2}$$
$$K_{AV} = 1.01 \times 10^{-7} \text{ cm/s}$$

**Dames & Moore**

JOB NO. 30798-001  
DATE 9/29/95  
TESTED EG  
LAB SOIL DESCRIPTION CL  
FINAL HEIGHT 2.067

DENSITY	BEFORE TEST	AFTER TEST
WT. SOIL & RINGS		390.6
WT. RINGS	91.9	91.9
WT. SOIL	282.9	298.7
WET DENSITY	117.5	120.0
DRY DENSITY	96.3	93.2
MAX. DRY DENSITY	96.3	—
PERCENT COMPACTION	—	—

<u>MOISTURE</u>	<u>BEFORE TEST</u>	<u>AFTER TEST</u>
WT. WET SOIL & PAN		<u>298.7</u>
WT. DRY SOIL & PAN		
WT. WATER		
WT. OF PAN NO.		
WT. DRY SOIL		
WATER CONTENT	<u>22.0</u>	<u>28.0</u>

SETUP NO. 3  
SURCHARGE 500 PSF  
35"

INITIAL DIAL 0.683  
FINAL DIAL .750

$$K = \frac{aL}{A\Delta t} \quad \text{in} \quad \frac{h_1}{h_2}$$

[illegible]

## PERCOLATION TEST - FALLING HEAD

**Dames & Moore**

JOB NO. 30798 - 001  
DATE 9/29/95  
TESTED SHL  
LAB SOIL DESCRIPTION CL  
FINAL HEIGHT 2.066

DENSITY	BEFORE TEST	AFTER TEST
WT. SOIL & RINGS		391.8
WT. RINGS	92.7	92.7
WT. SOIL	282.7	299.1
WET DENSITY	117.4	120.3
DRY DENSITY	94.7	91.7
MAX. DRY DENSITY	96.3	-
PERCENT COMPACTION	-	-

<u>MOISTURE</u>	<u>BEFORE TEST</u>	<u>AFTER TEST</u>
WT. WET SOIL & PAN		299.1
WT. DRY SOIL & PAN		228.
WT. WATER		
WT. OF PAN NO.		
WT. DRY SOIL		
WATER CONTENT	24.0	31.2

SETUP NO. 2  
SURCHARGE 500PSF  
35"

INITIAL DIAL 0.920  
FINAL DIAL -986

$$K = \frac{aL}{A\Delta t} \quad \text{in} \quad \frac{h_1}{h_2}$$

[illegible]

## PERCOLATION TEST - FALLING HEAD

**Dames & Moore**

OWNER/LOCATION MONTGOMERY WATSON

JOB NO. 30798-001

BORING NO. Remond + 470 OMC

DATE 9/29/95

DEPTH LOGAN LANDFILL

TESTED Ehl

**SAMPLE NO.**

LAB SOIL DESCRIPTION CL

INITIAL HEIGHT 2.00

FINAL HEIGHT 2.017

DENSITY	BEFORE TEST	AFTER TEST	MOISTURE	BEFORE TEST	AFTER TEST
WT. SOIL & RINGS		379.5	WT. WET SOIL & PAN		286.8
WT. RINGS	92.7		WT. DRY SOIL & PAN		222.2
WT. SOIL	280.0	286.8	WT. WATER		
WET DENSITY	116.3	118.1	WT. OF PAN NO.		
DRY DENSITY	92.3	91.5	WT. DRY SOIL		
MAX. DRY DENSITY	96.3	-	WATER CONTENT	26.0	29.1
PERCENT COMPACTION	-	-			

SETUP NO. 7

INITIAL DIAL 0.692

SURCHARGE 500 PSF

FINAL DIAL -209

$$K = \frac{aL}{A\Delta t} \quad \text{in} \quad \frac{h_1}{h_2}$$

33

[illegible]

## PERCOLATION TEST - FALLING HEAD

**Dames & Moore**

Montgomery Watson  
Logan Landfill

Bulk Sample	Wt soil and dish	1363.9
	Dry soil & dish	1262
	Dish	222.7

Moisture Content      9.8 %

### SIEVE ANALYSIS

Dry weight of total sample=      1039.3

Sieve Size	Weight Retained	Finer	% Finer	Sieve opening mm
1.5 inch	0	100.00%	100.0	37.5
3/4 inch	0	100.00%	100.0	19.0
3/8 inch	0	100.00%	100.0	9.5
# 4	0.29	99.97%	100.0	4.8
# 10	0.63	99.94%	99.9	2.0
# 20	0.57	99.95%	99.9	0.85
# 40	1.03	99.90%	99.9	0.43
# 60	1.48	99.86%	99.9	0.25
# 100	1.87	99.82%	99.8	0.15
# 200	2.34	99.77%	99.8	0.075

**APPENDIX L**

**Version: 2007.04.13.01      Rundate: 07/17/2007 02:30 PM**

Landfill boundary  
+ 2000 ft

0 480 960 1440 1920 ft

WR Number	Diversion Type/Location	Well Log	Status	Priority	Uses	CFS	ACFT	Owner Name
25-5145	Point to Point	P	18790000	DS	0.011	0.000	WILLIAM L. AND VELMA S. DAVIS	

	N1685 E110 W4 05 11N 1E SL					UT
<u>25-5148</u>	Point to Point	P	18580000 S	0.015	0.000	DEAN AND MARILYN PARKER REVOCABLE TRUST
	N490 E1660 SW 05 11N 1E SL					DEAN H. AND MARILYN PARKER, TRUSTEES
<u>25-5660</u>	Point to Point	P	19030000 S	0.000	0.000	OLIVER B. WORLEY
	S290 W515 NE 06 11N 1E SL					UT
<del>25-5661</del>	<del>Point to Point</del>	<del>P</del>	<del>19030000 S</del>	<del>0.000</del>	<del>0.000</del>	<del>OLIVER B. WORLEY</del>
	S150 W350 NE 06 11N 1E SL					UT
<u>25-5955</u>	Point to Point	P	19030000 S	0.050	0.000	HEBER T. AND SHIRLEY C. HARDMAN
	S1045 W450 E4 32 12N 1E SL					UT
<u>25-5956</u>	Point to Point	P	19030000 S	0.000	0.000	STATE OF UTAH DEPARTMENT OF TRANSPORTATION
	S840 W605 E4 32 12N 1E SL					4501 SOUTH 2700 WEST
<u>25-5957</u>	Point to Point	P	19030000 S	0.006	0.000	STATE OF UTAH DEPARTMENT OF TRANSPORTATION
	S875 W660 E4 32 12N 1E SL					PO BOX 148420 (RIGHT OF WAY)
<u>25-5958</u>	Point to Point	P	19030000 S	0.000	0.000	STATE OF UTAH DEPARTMENT OF TRANSPORTATION
	S1035 W510 E4 32 12N 1E SL					4501 SOUTH 2700 WEST
<u>25-5960</u>	Point to Point	P	19030000 S	0.000	0.000	THE PEOPLES BRADCASTING COMPANY
	S1035 W715 E4 32 12N 1E SL					UT
<u>25-5961</u>	Point to Point	P	19030000 S	0.011	0.000	DARLA DEAN MERRILL
	S1125 W1135 E4 32 12N 1E SL					UT
<u>25-5979</u>	Point to Point	P	19030000 S	0.011	0.000	PETER O. PHILLIPS
	N660 E1980 W4 32 12N 1E SL					97 SOUTH 400 EAST
<u>25-10569</u>	Underground	<u>well info</u> A	20060109 DIS	0.000	1.730	JASON LAIRD
	S20 E1190 NW 06 11N 1E SL					1394 WEST 200 NORTH
<del>25-10756</del>	<del>Underground</del>	<del>U</del>	<del>20070700 DIS</del>	<del>0.000</del>	<del>1.500</del>	<del>STEPHEN AND CHRISTINE SPETH</del>
	S100 E1150 E4 01 11N 1W SL					3996 S. 4600 W.
<u>25-2323</u>	Underground	P	19340500 S	0.022	0.000	ELIASON PACKING COMPANY
	N270 E1615 W4 31 12N 1E SL					UT
<u>25-2332</u>	Underground	P	19090000 IS	0.089	0.000	ALAN J. & JEAN M. ALDER

	N895 W2075 E4 06 11N 1E SL					407 SOUTH 1900 WEST
<u>25-2333</u>	Underground	P	19090000 IS	0.134	0.000	ALAN J. & JEAN M. ALDER
	N845 W2160 E4 06 11N 1E SL					407 SOUTH 1900 WEST
<u>25-2334</u>	Underground	P	19090000 IS	0.111	0.000	ALAN J. & JEAN M. ALDER
	N885 W2200 E4 06 11N 1E SL					407 SOUTH 1900 WEST
<u>25-2335</u>	Underground	P	19090000 IS	0.134	0.000	ALAN J. & JEAN M. ALDER
	N915 W2220 E4 06 11N 1E SL					407 SOUTH 1900 WEST
<u>25-2336</u>	Underground	P	19090000 IS	0.067	0.000	ALAN J. & JEAN M. ALDER
	N885 W2280 E4 06 11N 1E SL					407 SOUTH 1900 WEST
<u>25-2337</u>	Underground	P	19090000 IS	0.111	0.000	ALAN J. & JEAN M. ALDER
	N845 W2265 E4 06 11N 1E SL					407 SOUTH 1900 WEST
<u>25-2338</u>	Underground	P	19090000 DIS	0.045	0.000	ALAN J. & JEAN M. ALDER
	N945 W2450 E4 06 11N 1E SL					407 SOUTH 1900 WEST
<u>25-2341</u>	Underground	P	19120000 IS	0.178	0.000	GERALD J. AND SANDRA C. ALDER
	S870 E2470 NW 06 11N 1E SL					2000 WEST 200 SOUTH
<u>25-2342</u>	Underground	P	19120000 IS	0.223	0.000	ALAN J. & SANDRA C. ALDER
	S770 E2435 NW 06 11N 1E SL					2000 WEST 200 SOUTH
<u>25-2343</u>	Underground	P	19120000 IS	0.111	0.000	ALAN J. & SANDRA C. ALDER
	S540 E2440 NW 06 11N 1E SL					2000 WEST 200 SOUTH
<u>25-2345</u>	Underground	P	19120000 IS	0.000	0.000	GERALD J. AND SANDRA C. ALDER
	S425 E2450 NW 06 11N 1E SL					2000 WEST 200 SOUTH
<u>25-2347</u>	Underground	<u>well info</u> P	19090000 S	0.033	0.000	BRET A. AND JENNY L. ALDER
	N15 E1115 SW 31 12N 1E SL					2255 WEST 200 SOUTH
<del>25-2348</del>	<del>Underground</del>	<del>P</del>	<del>19090000 S</del>	<del>0.067</del>	<del>0.000</del>	<del>ASHTON BECKSTEAD</del>
	N835 E955 SW 31 12N 1E SL					UT
<u>25-2352</u>	Underground	P	19160500 DS	0.022	0.000	WILLIAM L. AND VELMA S. DAVIS
	S820 E170 NW 05 11N 1E SL					UT
<del>25-2393</del>	<del>Underground</del>	<del>P</del>	<del>19120000 DIS</del>	<del>0.082</del>	<del>0.000</del>	<del>WAYNE R. AND GENE M. RICH</del>
	N845 E2190 W4 32 12N 1E SL					1636 EAST 1030 NORTH
<u>25-2409</u>	Underground	P	19160000 IS	0.200	0.000	HARRY I. WILLMORE
	S350 W565 E4 31 12N 1E SL					UT
<u>25-2410</u>	Underground	P	19160000 IS	0.134	0.000	HARRY I. WILLMORE

	S297 W565 E4 31 12N 1E SL					531 W. 100 N.
<u>25-2411</u>	Underground	P	19160000 I	0.096	0.000	HARRY I. WILLMORE
	S445 W385 E4 31 12N 1E SL					UT
<u>25-2431</u>	Underground	P	19150000 IS	0.167	0.000	JACK B. PARSON
	N250 E1375 W4 32 12N 1E SL					1602 SUNSET DRIVE
<u>25-2432</u>	Underground	P	19320700 IO	0.156	0.000	STATE OF UTAH DIVISION OF WILDLIFE RESOURCES
	N160 E640 W4 32 12N 1E SL					1594 WEST NORTH TEMPLE, STE 2110
<u>25-2463</u>	Underground	P	19140000 IS	0.401	0.000	GLACUS GREGORY MERRILL
	S230 W1070 E4 31 12N 1E SL					P. O. BOX 526
<u>25-2489</u>	Underground	P	DIS	0.000	3.532	BRENT F. AND ANNETTE T. BRYNER
	N2199 E1071 SW 31 12N 1E SL					244 NORTH 500 WEST
<del>25-2489</del>	<del>Underground</del>	<del>P</del>	<del>DIS</del>	<del>0.000</del>	<del>3.532</del>	<del>BRENT F. AND ANNETTE T. BRYNER</del>
	N2157 E1515 SW 31 12N 1E SL					244 NORTH 500 WEST
<u>25-2541</u>	Underground	P	19000000 IS	0.089	0.000	OLIVER B. WORLEY
	S240 E1990 N4 06 11N 1E SL					UT
<u>25-2667</u>	Underground	P	18800000 S	0.022	0.000	ASHTON BECKSTEAD
	N1825 E1135 SW 31 12N 1E SL					UT
<del>25-2746</del>	<del>Underground</del>	<del>P</del>	<del>19100500 IS</del>	<del>0.033</del>	<del>0.000</del>	<del>PETER O. PHILLIPS</del>
	S1425 W550 N4 32 12N 1E SL					97 SOUTH 400 EAST
<u>25-2845</u>	Underground	P	19300000 IO	0.228	0.000	STATE OF UTAH DIVISION OF WILDLIFE RESOURCES
	S130 E645 W4 32 12N 1E SL					1594 WEST NORTH TEMPLE, STE 2110
<u>25-2846</u>	Underground	P	19300000 O	0.334	0.000	STATE OF UTAH DIVISION OF WILDLIFE RESOURCES
	S30 E370 W4 32 12N 1E SL					1594 WEST NORTH TEMPLE, STE 2110
<u>25-2847</u>	Underground	P	19280000 O	0.497	0.000	STATE OF UTAH DIVISION OF WILDLIFE RESOURCES
	S17 E642 W4 32 12N 1E SL					1594 WEST NORTH TEMPLE, STE 2110
<u>25-2848</u>	Underground	P	19290000 O	0.557	0.000	STATE OF UTAH DIVISION OF WILDLIFE RESOURCES
	S40 E645 W4 32 12N 1E SL					1594 WEST NORTH TEMPLE, STE 2110
<u>25-2849</u>	Underground	P	19280000 O	0.334	0.000	STATE OF UTAH DIVISION OF WILDLIFE RESOURCES

	S2 E460 W4 32 12N 1E SL					1594 WEST NORTH TEMPLE, STE 2110
<u>25-2850</u>	Underground	P	19290000 O	0.390	0.000	STATE OF UTAH DIVISION OF WILDLIFE RESOURCES
	N15 E615 W4 32 12N 1E SL					1594 WEST NORTH TEMPLE, STE 2110
<u>25-2851</u>	Underground	P	18950000 O	0.056	0.000	STATE OF UTAH DIVISION OF WILDLIFE RESOURCES
	S26 E640 W4 32 12N 1E SL					1594 WEST NORTH TEMPLE, STE 2110
<u>25-2910</u>	Underground	P	18800000 IS	0.111	0.000	THOMAS I. AND ENETTA KNOWLES
	S548 W1115 N4 06 11N 1E SL					451 N. 200 W.
<u>25-2941</u>	Underground	P	19160000 IS	0.045	0.000	CORPORATION OF THE PRESIDING BISHOP OF THE CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS
	S390 W435 E4 31 12N 1E SL					50 EAST NORTH TEMPLE, 12TH FLOOR
<u>25-2962</u>	Underground	P	19050000 DIS	0.018	0.000	ERNEST DEAN
	N200 W1390 E4 31 12N 1E SL					1875 WEST 200 NORTH
<u>25-3078</u>	Underground	P	19371018 O	0.290	0.000	STATE OF UTAH DIVISION OF WILDLIFE RESOURCES
	N15 E595 W4 32 12N 1E SL					1594 WEST NORTH TEMPLE, STE 2110
<u>25-3083</u>	Underground	P	19491109 O	0.800	0.000	STATE OF UTAH DIVISION OF WILDLIFE RESOURCES
	S5 E370 W4 32 12N 1E SL					1594 WEST NORTH TEMPLE, STE 2110
<u>25-3083</u>	Underground	P	19491109 O	0.800	0.000	STATE OF UTAH DIVISION OF WILDLIFE RESOURCES
	N30 E370 W4 32 12N 1E SL					1594 WEST NORTH TEMPLE, STE 2110
<u>25-3118</u>	Underground	P	19400417 DIO	0.015	0.000	STATE OF UTAH DIVISION OF WILDLIFE RESOURCES
	S50 E735 W4 32 12N 1E SL					1594 WEST NORTH TEMPLE, STE 2110
<u>25-3190</u>	Underground	P	19511116 O	0.480	0.000	STATE OF UTAH DIVISION OF WILDLIFE RESOURCES
	S260 E650 W4 32 12N 1E SL					1594 WEST NORTH TEMPLE, STE 2110
<u>25-3196</u>	Underground	P	19520604 IS	0.358	0.000	WILLIAM L. AND VELMA S. DAVIS
	S1460 E660 NW 05 11N 1E SL					2ND SOUTH 6TH WEST
<del>25-3224</del>	<del>Underground</del>	<del>P</del>	<del>19540921 DI</del>	<del>0.015</del>	<del>0.000</del>	<del>DUANE A. AND CAROL E. BROOKSHIER</del>
	S240 E480 W4 05 11N 1E SL					UT
<u>25-3262</u>	Underground	<u>well</u> <u>info</u> P	19551010 O	3.470	0.000	STATE OF UTAH DIVISION OF WILDLIFE RESOURCES

	N81 E595 W4 32 12N 1E SL						1594 WEST NORTH TEMPLE, STE 2110
<u>25-3262</u>	Underground	<a href="#">well info</a>	P	19551010 O	3.470	0.000	STATE OF UTAH DIVISION OF WILDLIFE RESOURCES
	N106 E598 W4 32 12N 1E SL						1594 WEST NORTH TEMPLE, STE 2110
<u>25-3262</u>	Underground	<a href="#">well info</a>	P	19551010 O	3.470	0.000	STATE OF UTAH DIVISION OF WILDLIFE RESOURCES
	N235 E607 W4 32 12N 1E SL						1594 WEST NORTH TEMPLE, STE 2110
<u>25-3262</u>	Underground	<a href="#">well info</a>	P	19551010 O	3.470	0.000	STATE OF UTAH DIVISION OF WILDLIFE RESOURCES
	N241 E750 W4 32 12N 1E SL						1594 WEST NORTH TEMPLE, STE 2110
<u>25-3262</u>	Underground	<a href="#">well info</a>	P	19551010 O	3.470	0.000	STATE OF UTAH DIVISION OF WILDLIFE RESOURCES
	N30 E834 W4 32 12N 1E SL						1594 WEST NORTH TEMPLE, STE 2110
<u>25-3287</u>	Underground		P	19560503 S	0.015	0.000	CORPORATION OF THE PRESIDING BISHOP LDS CHURCH
	S1315 E2410 W4 32 12N 1E SL						ATTN: NATURAL RESOURCE SERVICES
<u>25-3302</u>	Underground		P	19561029 S	0.015	0.336	GORDON L. & JEAN A. PARKER
	N2495 E456 W4 05 11N 1E SL						259 EAST 300 SOUTH
<u>25-3370</u>	Underground		P	19600523 O	2.000	0.000	STATE OF UTAH DIVISION OF WILDLIFE RESOURCES
	N600 E1060 W4 32 12N 1E SL						1594 WEST NORTH TEMPLE, STE 2110
<u>25-3370</u>	Underground	<a href="#">well info</a>	P	19600523 O	2.000	0.000	STATE OF UTAH DIVISION OF WILDLIFE RESOURCES
	N470 E1180 W4 32 12N 1E SL						1594 WEST NORTH TEMPLE, STE 2110
<u>25-4198</u>	Underground		P	19640601 S	0.015	0.000	MICHAEL K. AND CHERYL ANN BENNETT
	N2385 E455 S4 31 12N 1E SL						BOX 374
<u>25-4645</u>	Underground		P	19660711 DO	0.100	0.000	DON JAY AND CATHY ANDERSON
	N2315 E2260 SW 32 12N 1E SL						35 E. 300 NORTH
<u>25-4773</u>	Underground		P	19670828 IS	0.152	0.000	MICHAEL K. AND CHERYL ANN BENNETT
	N2340 W2300 SE 31 12N 1E SL						BOX 374
<u>25-4975</u>	Underground	<a href="#">well info</a>	P	19700417 I	0.500	0.000	CORPORATION OF THE PRESIDING BISHOP LDS CHURCH
	N1000 W1815 S4 32 12N 1E SL						ATTN: NATURAL RESOURCE SERVICES
<u>25-5144</u>	Surface		P	18580000 IS	1.250	0.000	SOUTHWEST FIELD IRRIGATION COMPANY

	N1220 W370 E4 06 11N 1E SL					715 SOUTH 1000 WEST
<u>25-5398</u>	Surface	P	18600501 I	2.500	0.000	LOGAN COW PASTURE WATER COMPANY
	N155 W2185 E4 31 12N 1E SL					UT
<u>25-5399</u>	Surface	P	18600501 I	3.800	0.000	LOGAN COW PASTURE WATER COMPANY
	N155 W2185 E4 31 12N 1E SL					C/O CHARLES NIEDERHAUSER
<u>25-5400</u>	Surface	P	18600501 I	1.200	0.000	LOGAN COW PASTURE WATER COMPANY
	N155 W2185 E4 31 12N 1E SL					C/O CHARLES NIEDERHAUSER
<u>25-5401</u>	Surface	P	18600501 I	15.000	0.000	LOGAN COW PASTURE WATER COMPANY
	N155 W2185 E4 31 12N 1E SL					UT
<u>25-5402</u>	Rediversion	P	18880501 IS	9.000	0.000	LOGAN COW PASTURE WATER COMPANY
	N155 W2185 E4 31 12N 1E SL					UT
<del>25-5578</del>	<del>Underground</del>	<del>P</del>	<del>19340000 S</del>	<del>0.027</del>	<del>0.000</del>	<del>BRET A. AND JENNY L. ALDER</del>
	N560 E895 SW 31 12N 1E SL					135 NORTH 400 WEST
<del>25-5656</del>	<del>Underground</del>	<del>P</del>	<del>19270700 IS</del>	<del>0.049</del>	<del>0.000</del>	<del>MARGIE ANN BECKSTEAD</del>
	N2190 E1000 SW 31 12N 1E SL					415 WEST 1800 NORTH
<u>25-5684</u>	Underground	P	19100000 S	0.078	0.000	PETER O. PHILLIPS
	S1595 E1725 NW 32 12N 1E SL					97 SOUTH 400 EAST
<del>25-5685</del>	<del>Underground</del>	<del>P</del>	<del>19340000 S</del>	<del>0.002</del>	<del>0.000</del>	<del>JOSEPH MEYRICK</del>
	S1375 W60 N4 32 12N 1E SL					UT
<u>25-5686</u>	Underground	P	19160000 IS	0.200	0.000	DEWAIN BERGER
	S350 W565 E4 31 12N 1E SL					UT
<u>25-5687</u>	Underground	P	19160000 IS	0.134	0.000	DEWAIN BERGER
	S297 W565 E4 31 12N 1E SL					UT
<u>25-5688</u>	Underground	P	19340000 S	0.200	0.000	DEWAIN BERGER
	S650 W400 E4 31 12N 1E SL					UT
<u>25-5698</u>	Underground	P	19340000 I	0.178	0.000	LOUISE R. RICH
	N1160 W10 SE 31 12N 1E SL					UT
<u>25-5704</u>	Underground	P	19340000 IS	0.134	0.000	GLACUS G. MERRILL
	S225 E2000 W4 32 12N 1E SL					P. O. BOX 526
<u>25-5716</u>	Underground	P	19720612 IS	0.200	0.000	GLACUS G. MERRILL

	S940 E2015 W4 32 12N 1E SL					P. O. BOX 526
<u>25-5767</u>	Underground S1475 W1725 NE 06 11N 1E SL	A	19721013 DIOS	0.030	0.000	CHARLES W. POTTER 736 SOUTH MAIN
<u>25-5964</u>	Surface N155 W2185 E4 31 12N 1E SL	P	19340000 I	2.550	0.000	LOGAN COW PASTURE WATER COMPANY UT
<u>25-5965</u>	Rediversion N155 W2185 E4 31 12N 1E SL	P	19030000 DIOS	0.271	0.000	LOGAN COW PASTURE IRRIGATION COMPANY UT
<u>25-5966</u>	Rediversion N155 W2185 E4 31 12N 1E SL	P	19020000 IS	0.430	0.000	LOGAN COW PASTURE WATER COMPANY UT
<u>25-5967</u>	Rediversion N155 W2185 E4 31 12N 1E SL	P	19020000 DIOS	0.500	0.000	LOGAN COW PASTURE IRRIGATION COMPANY UT
<u>25-5969</u>	Rediversion N155 W2180 E4 31 12N 1E SL	P	19030000 IS	1.500	0.000	LOGAN COW PASTURE WATER COMPANY UT
<u>25-5973</u>	Rediversion N155 W2185 E4 31 12N 1E SL	P	19340000 I	1.000	0.000	LOGAN COW PASTURE WATER COMPANY UT
<u>25-5974</u>	Underground S1680 E1335 NW 32 12N 1E SL	P	19020000 S	0.033	0.000	PETER O. PHILLIPS 97 SOUTH 400 EAST
<del><u>25-5975</u></del>	<del>Surface S1300 W965 N4 32 12N 1E SL</del>	<del>P</del>	<del>19020000 S</del>	<del>0.022</del>	<del>0.000</del>	<del>ROBERT THALMAN</del> UT
<u>25-5976</u>	Rediversion N155 W2185 E4 31 12N 1E SL	P	19350000 IS	1.000	0.000	LOGAN COW PASTURE WATER COMPANY C/O CHARLES NIEDERHAUSER
<u>25-5980</u>	Underground N155 W2185 E4 31 12N 1E SL	P	19790628 I	5.050	0.000	LOGAN COW PASTURE WATER COMPANY UT
<u>25-6018</u>	Underground N2525 E2140 SW 31 12N 1E SL	A	19730727 DIS	0.015	0.000	JUAN C. AND FERNANDO REYES 2050 W. VALLEY VIEW HWY.
<u>25-6958</u>	Underground N2040 E110 S4 32 12N 1E SL	P	19760611 S	0.015	0.000	DUNN-JARDINE LIMITED PARTNERSHIP 711 W. 800 S., P. O. BOX 27047

<u>25-7176</u>	Underground	P	19770217 S	0.015	0.000	ROBERT L. AND PEGGY ANN JENSEN 1639 SADDLE HILL DRIVE
	S2520 E165 NW 05 11N 1E SL					
<del>25-7330</del>	<del>Underground</del>	<del>P</del>	<del>19770404 IS</del>	<del>0.720</del>	<del>0.000</del>	<del>ROBERT THALMAN</del> RFD #1 BOX 213-A
	<del>S1120 W480 N4 32 12N 1E SL</del>					
<u>25-7562</u>	Underground	<u>well info</u> P	19771208 IS	0.015	0.000	JEAN B. RYAN 95 SOUTH 500 WEST
	S1920 E500 NW 05 11N 1E SL					
<u>25-7650</u>	Underground	P	19780612 O	0.031	0.000	DUNN-JARDINE LIMITED PARTNERSHIP P.O. BOX 27047
	N2040 E110 S4 32 12N 1E SL					
<u>25-7697</u>	Rediversion	P	19780815 S	0.015	0.000	JAY VANNOY 1092 NORTH 1700 EAST
	N1850 W1570 E4 06 11N 1E SL					
<u>25-7697</u>	Surface	P	19780815 S	0.015	0.000	JAY VANNOY 1092 NORTH 1700 EAST
	N1220 W370 E4 06 11N 1E SL					
<u>25-7706</u>	Underground	<u>well info</u> P	19780905 DIS	0.150	0.000	PAUL BEECHER 425 SOUTH 1500 WEST
	S1920 E500 NW 05 11N 1E SL					
<u>25-7901</u>	Underground	P	19790222 DIS	0.015	0.000	WILLIAM WORLEY 1747 WEST 200 SOUTH
	S260 W1060 NE 06 11N 1E SL					
<del>25-7903</del>	<del>Surface</del>	<del>P</del>	<del>18990000 IS</del>	<del>0.100</del>	<del>0.000</del>	<del>JEAN B. RYAN</del> 95 SOUTH 500 WEST
	<del>N380 E820 W4 05 11N 1E SL</del>					
<u>25-7924</u>	Underground	P	19790410 DIS	0.056	0.000	GRANT W. POTTER 1900 WEST 400 SOUTH
	N2110 W1700 NE 06 11N 1E SL					
<u>25-8014</u>	Underground	P	19790620 DO	0.015	0.000	WRIGHT DRILLING COMPANY 2800 SOUTH MAIN
	N2200 W560 S4 32 12N 1E SL					
<u>25-8174</u>	Underground	P	19800703 IS	0.100	0.000	V. DEAN ADAMS & JOYCE Y. ADAMS FAMILY TRUST V. DEAN AND JOYCE Y. ADAMS TRUSTEES
	S1590 E1420 NW 05 11N 1E SL					
<u>25-8251</u>	Underground	P	19810305 I	0.070	0.000	ROBERT L. AND PEGGY ANN JENSEN 1636 SADDLE HILL DRIVE
	S2520 E165 NW 05 11N 1E SL					
<u>25-8517</u>	Underground	P	19830713 DIS	0.015	0.000	GILLEAN GAUVREAU 2185 WEST 200 SOUTH
	N160 E1380 SW 31 12N 1E SL					
<u>25-8589</u>	Underground	<u>well info</u> P	19840715 DIOS	0.000	2.290	GAIL O. AND KARLA RYAN

	N459 E5262 W4 06 11N 1E SL					1545 WEST 600 SOUTH
<u>25-8619</u>	Underground	P	19760611 S	0.015	0.000	LARRY W. MILLER
	N2040 E110 S4 32 12N 1E SL					1050 WEST 200 NORTH
<u>25-8620</u>	Underground	P	19780612 O	0.031	0.000	LARRY W. MILLER
	N2040 E110 S4 32 12N 1E SL					1050 WEST 200 NORTH
<u>25-8704</u>	Underground	P	19850822 IS	0.005	0.000	WILLIAM WORLEY
	S260 W1060 NE 06 11N 1E SL					1747 WEST 200 SOUTH
<u>25-8841</u>	Underground	<a href="#"><u>well info</u></a>	P	19870515 I	0.100	0.400
	N2459 E277 W4 05 11N 1E SL					GORDON PARKER 259 EAST 300 SOUTH
<u>25-9060</u>	Underground	<a href="#"><u>well info</u></a>	U	19900504 IS	0.485	0.000
	N400 E1920 W4 05 11N 1E SL					JACK H. RYAN 425 S. 1500 WEST
<u>25-9062</u>	Underground	U	19900510 DMO	25.000	18000.000	BEAR RIVER WATER CONSERVENCY DISTRICT
	N2300 E1850 SW 32 12N 1E SL					BOX ELDER COUNTY COURTHOUSE
<del>25-9194</del>	<del>Underground</del>	<del><a href="#"><u>well info</u></a></del>	<del>A</del>	<del>19900504 DIS</del>	<del>0.015</del>	<del>0.000</del>
	N400 E1920 W4 05 11N 1E SL					JACK H. RYAN 95 SOUTH 500 WEST
<del>25-9377</del>	<del>Underground</del>	<del><a href="#"><u>well info</u></a></del>	<del>P</del>	<del>19950224 DIS</del>	<del>0.000</del>	<del>1.286</del>
	S161 E1038 W4 06 11N 1E SL					ROSEAN PAYNE 2235 WEST 600 SOUTH

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## Water Balance for the Logan Landfill

The water balance for the Logan Landfill was based on the ground-water contour map and landfill configuration before implementation of the design included in this application. The water balance represents a worse-case scenario as all precipitation that falls on the landfill and is not removed by evapotranspiration is assumed to infiltration through the daily cover. Recent changes in the landfill operating procedures and implementation of the landfill design and cover promote surface water run-off which reduce the quality of water that infiltrates. As the final cover is placed, the infiltration term will approach zero.

For the purposes of calculating flow quantities, ground-water beneath the east boundary of the landfill was assumed to flow westward into the landfill, and flow beneath the west boundary and southwest boundary was assumed to be outward away from the landfill. Other factors in the balance were the contributions of precipitation and artesian seepage and water lost through evapotranspiration and leachate removal. Because of uncertainty in the evapotranspiration factor, a range of values is presented. Additional discussion about this factor is included in the following paragraphs. The water balance was calculated using the following equation:

$$S_{out} = P - ET + S_{in} + S_{up} - L \quad (1)$$

where:

$S_{out}$	=	Horizontal seepage into downgradient areas
$P$	=	Precipitation (38,800,000 gallons/year)
$ET$	=	Evapotranspiration (32,508,000 to 38,800,000 gallons per year)
$S_{in}$	=	Horizontal seepage into landfill from upgradient areas (170 gallons/year)
$S_{up}$	=	Vertical seepage into landfill from beneath (278,000 gallons/year)

$$L = \text{Leachate pumped from landfill (48,000 gallons/year)}$$

Supporting calculations for each of these variables are included in the following sections:

Calculations:

$$\begin{aligned} S_{out} &= 38,300,000 - (32,500,000 \text{ to } 38,800,000) + 170 + 287,000 - 48,000 \\ &= 6,040,000 \text{ to } 239,000 \text{ gallons/year} \end{aligned}$$

### **Precipitation and Evapotranspiration**

Average annual precipitation that falls in the Logan area ranges from 15.0 to 20.0 inches per year (USGS, 1994). More precise information from the Utah Climate Center at Utah State University show that average annual precipitation in the City of Logan has been 16.6 inches for the period from 1956 to 1992 (Ashcroft, 1992). This amount equates to 38,300,000 gallons per year of precipitation falling on the 85 acre landfill. Average annual evapotranspiration was the subject of a study of 200 ground water basins in the western united states by Maxey and Eakin, (1949). Based on this study, an evapotranspiration rate of 85% of precipitation was estimated for areas with annual precipitation rates of 16 to 20 inches per year (Dettinger, 1989). However, actual evapotranspiration rates at the Landfill are thought to be higher because unlike the ground surface conditions in the groundwater basin study, the landfill surface is covered with compacted fill that tends to minimize infiltration and promote run-off. Also, information from the Utah Climate Center indicates that there is an averag annual evaporation potential of 44.4 inches per year (Ashcroft, 1992), which is more than 2.5 times the annual precipitation amount. Applying a range of evapotranspiration of from 85 to 100 percent of precipitation suggests that between 14.1 and 16.6 inches of water evaporate from the landfill surface each year. This equates to a range of 32,500,000 to 38,800,000 gallons.

### **Horizontal Seepage into the Landfill**

Based on the groundwater contour map (see Figure III-12), horizontal seepage into the landfill occurs along the east margin of the facility. The quantity of seepage is estimated from the equation:

$$S_{in} = K_{ih}L \quad (2)$$

where:

- $S_{in}$  = Horizontal seepage into landfill from upgradient areas  
 $K$  = Horizontal hydraulic conductivity (assumed to be typical of a silty clay) =  $10^{-6}$  cm/sec or 0.0028 feet per day (Freeze and Cherry, 1979)  
 $i$  = Horizontal hydraulic gradient (estimated from groundwater contour map) = 0.0049 feet per foot  
 $h$  = Saturated thickness of the water bearing zone - assumed to be 5 feet  
 $L$  = Length of water bearing zone through which flow occurs - about 900 feet along east side of the landfill

Calculations:

$$\begin{aligned}
 S_{in} &= (0.0028)(0.0049)(5)(900) \\
 &= 0.0625 \text{ ft}^3/\text{day} \\
 &= 170 \text{ gallons/year}
 \end{aligned}$$

### Vertical Seepage into the Landfill

Vertical seepage is estimated by the equation:

$$S_{up} = KiA \quad (3)$$

where:

- $S_{up}$  = Upward seepage due to artesian conditions (in cubic feet per day)  
 $K$  = Vertical hydraulic conductivity =  $5 \times 10^{-8}$  cm/sec or  $1.42 \times 10^{-9}$  ft/day (average percolation test results)  
 $i$  = Vertical hydraulic gradient (calculated from Bishop, 1975) = 0.2 ft/ft.  
 $A$  = Area of landfill through which artesian flow occurs = 85 acres = 3,702,600 ft<sup>2</sup>

Calculations:

$$\begin{aligned} S_{up} &= (1.42 \times 10^{-4})(0.2)(3,702,600) \\ &= 105 \text{ ft}^3/\text{day} \\ &= 287,000 \text{ gallons/year} \end{aligned}$$

### **Leachate Pumped from Landfill**

According to disposal records kept by the City of Logan Waste Water Treatment Facility approximately 48,000 gallons of leachate was discharged to the facility during the period from June, 1993 to June, 1994. It is worth noting that the quantity of leachate pumped from the landfill during the same period from 1994 to 1995 was reported to be about 10,000 gallons less than that used in the water balance calculations. This is likely to be a result of increased precipitation run-off.

### **Horizontal Seepage from the Landfill**

To check the validity of the water balance and estimate of horizontal seepage from the landfill as calculated in equation (1), an independent estimate of the outward horizontal seepage from the landfill was made. Using equation (2), which was used to estimate horizontal seepage into the landfill:

$$S_{out} = KihL \quad (4)$$

where:

$$\begin{aligned} S_{out} &= \text{Horizontal seepage from the landfill} \\ K &= \text{Hydraulic conductivity (for a silty clay) = } 10^{-6} \text{ cm/sec or } \\ &\quad 0.0028 \text{ ft/day} \\ &\quad \text{(Freeze and Cherry, 1979)} \\ i &= \text{Horizontal hydraulic gradient = 0.3 (estimated existing} \\ &\quad \text{downgradient side slopes of about 3 to 1)} \\ h &= \text{Saturated thickness of the water bearing zone - assumed to average} \\ &\quad 5 \text{ feet} \\ L &= \text{Length of water bearing zone through which flow occurs - about} \\ &\quad 5,000 \text{ feet on the west and southwest sides of the landfill} \end{aligned}$$

Calculations:

$$\begin{aligned} S_{out} &= (0.0028)(0.3)(5)(5000) \\ &= 21 \text{ ft}^3/\text{day} \\ &= 57,400 \text{ gallons/year} \end{aligned}$$

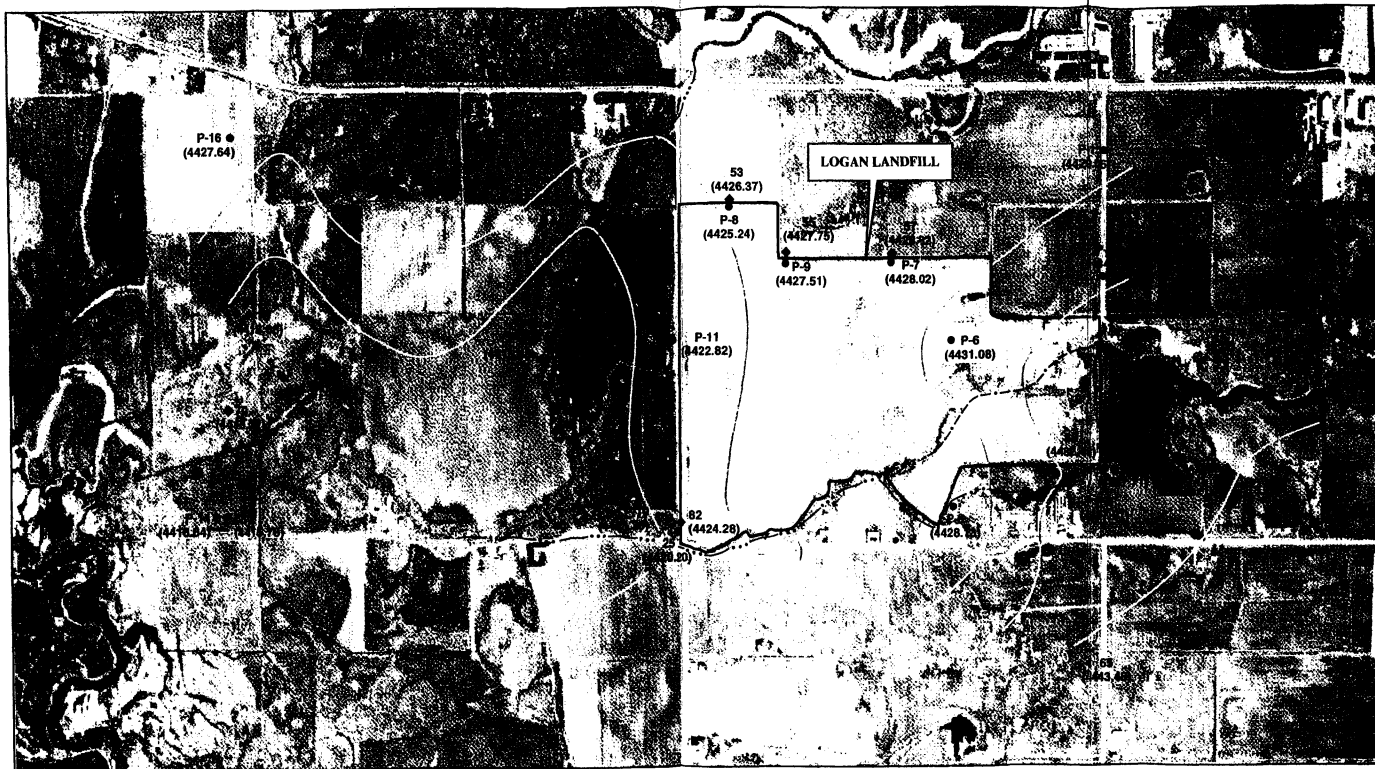
The results of the independent horizontal seepage estimate from equation (4) (57,000 gallons per year) are less than the range of values calculated by the water balance equation (1) (6.04 million to 239 thousand gallons per year). These seepage rates range from about 11 to 0.5 gallons per minute.

### **Uncertainties in the Water Balance Calculations**

Although the calculations indicate that there is constant seepage from the Landfill, it is important to discuss the uncertainties in this estimate. Evapotranspiration rates are assumed to range from 85 percent of the annual precipitation at the one extreme to 100 percent at the other, as indicated earlier. Because local climatological data suggests that evaporation potential is more than twice the annual precipitation (Ashcroft, 1992), it is likely that the actual evapotranspiration rate is closer to the higher percentage. Thus, the resulting seepage rate is probably closer to the lower number.

Another uncertainty is the horizontal ground-water gradient inside the Landfill at its perimeter. For the purposes of the water balance calculation, the horizontal gradient is assumed to equal that of the Landfill side slopes (an angle of about 3 to 1). It is likely that the actual gradient is much flatter at the Landfill perimeter. Overestimating the gradient that drives outward seepage will overestimate the seepage rate proportionately.

Additionally, as indicated in the initial water balance discussion, the water balance calculations assume that 100 percent of the precipitation that does not evaporate infiltrates into the landfill. As the landfill configuration and cap construction reach maturity, excess precipitation will run-off into the run-off control system and not infiltrate. Because of leachate pumping in combination with landfill grading to promote run-off, the quantity of water that seeps into downgradient areas is probably close to zero.

**EXPLANATION**

- P-2 (4434.59) • Piezometer location and water table elevation  
 70 (4415.37) ♦ Surface water measurement location and elevation  
 ——— Elevation contour (feet above MSL)  
 - - - - - Approximate location of the abandoned stream channel  
 ——— Existing stream channel



0 300 600  
Scale in Feet

**WATER TABLE ELEVATION  
 CONTOUR MAP  
 MARCH 1991  
 FIGURE III-12**



# **SITE GROUND MOTION [IBC SECTION 1615]**

Project: **Logan City Landfill**  
 Latitude = **41.731833**  
 Longitude = **-111.875213**

Number: **00386-010**  
 Date: **7/12/07**  
 By: **DS**

$S_s = \boxed{0.964}$  (g)  
 $S_1 = \boxed{0.343}$  (g)

The mapped spectral acceleration for short periods [1615.1]

The mapped spectral acceleration for a 1-second period

Site Class = **D**  
 $F_a = 1.11$   
 $F_v = 1.71$

Table 16.15.1.1  
 Table 1615.1.2(1)  
 Table 1615.1.2(2)

$S_{MS} = 1.074$

$S_{MS} = F_a * S_s$

\*The maximum considered E.Q. spectral response accelerations

$S_{M1} = 0.588$

$S_{M1} = F_v * S_1$

for short and 1-second periods [1615.1.2]

MCE/PGA = **0.430**

$0.4 * S_{MS}$  [Equation 16-42 in accordance with 1802.2.7 and 1615.2.1]

$S_{DS} = 0.716$

$S_{DS} = 2/3 * S_{MS}$

\*The design spectral response acceleration

$S_{D1} = 0.392$

$S_{D1} = 2/3 * S_{M1}$

at short and 1-second periods

$T_0 = 0.109$

$T_0 = 0.2 * S_{D1} / S_{DS}$

$T_s = 0.547$

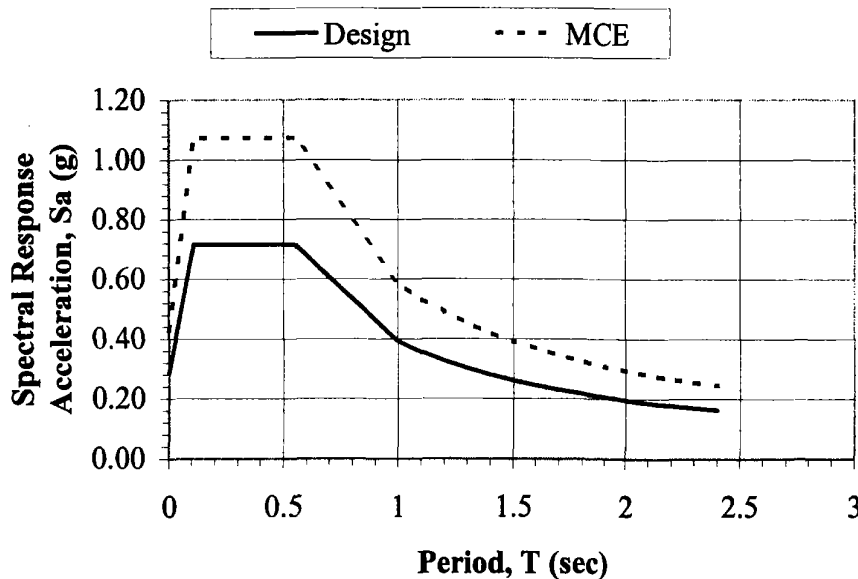
$T_s = S_{D1} / S_{DS}$

$\Delta T =$

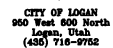
**0.1**

Time step for diagram

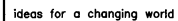
## **Response Spectrums**



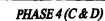
T (sec)	Sa (g)	Sa (MCE) (g)
0	0.29	0.43
0.11	0.72	1.07
0.55	0.72	1.07
1.00	0.39	0.59
1.10	0.36	0.53
1.20	0.33	0.49
1.30	0.30	0.45
1.40	0.28	0.42
1.50	0.26	0.39
1.60	0.24	0.37
1.70	0.23	0.35
1.80	0.22	0.33
1.90	0.21	0.31
2.00	0.20	0.29
2.10	0.19	0.28
2.20	0.18	0.27
2.30	0.17	0.26
2.40	0.16	0.24



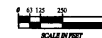
## CONSULTANTS



4153 South Commerce Drive  
Salt Lake City, Utah 84107  
(801)270-9400 Fax: (801)270-9401

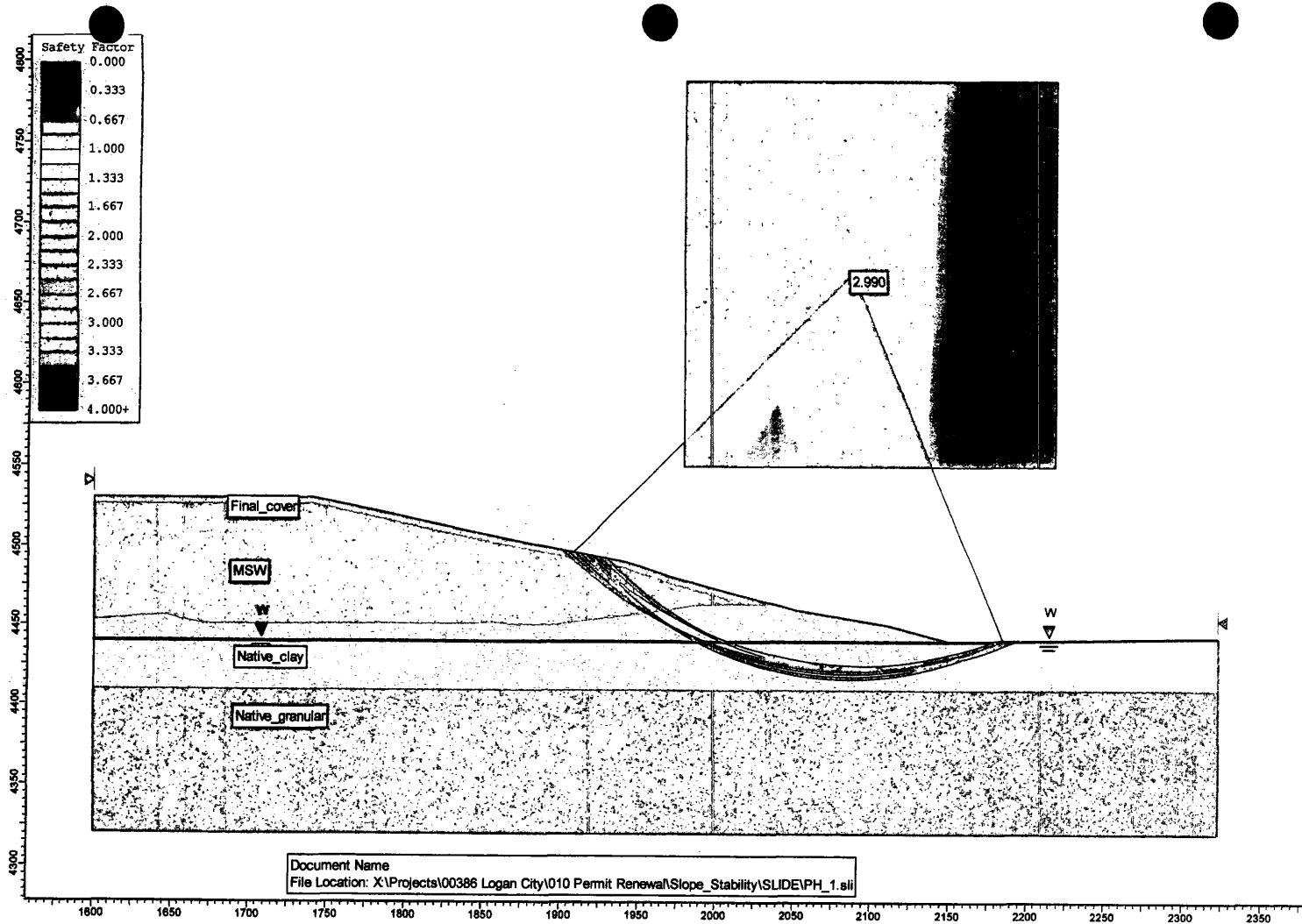


REFERENCE:  
ADAPTED FROM MAP PROVIDED BY CLIENT  
TOPOGRAPHY UPDATED, 2006

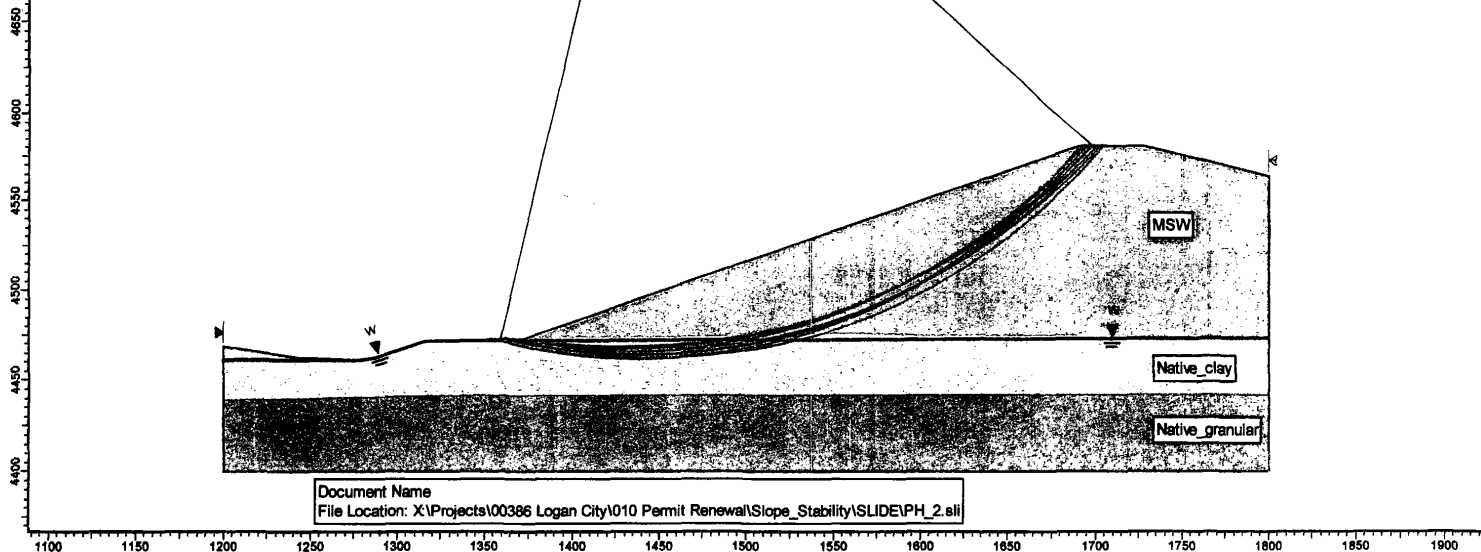
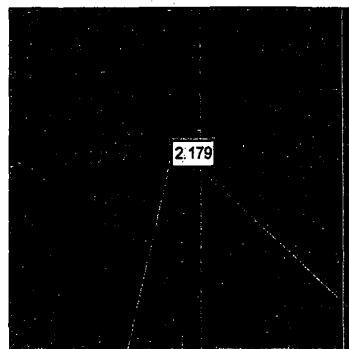
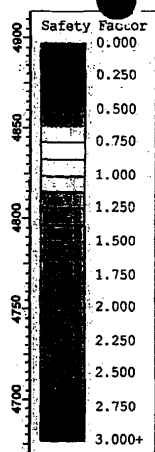


## LOGAN CITY LANDFILL SLOPE STABILITY CROSS SECTIONS

N-2

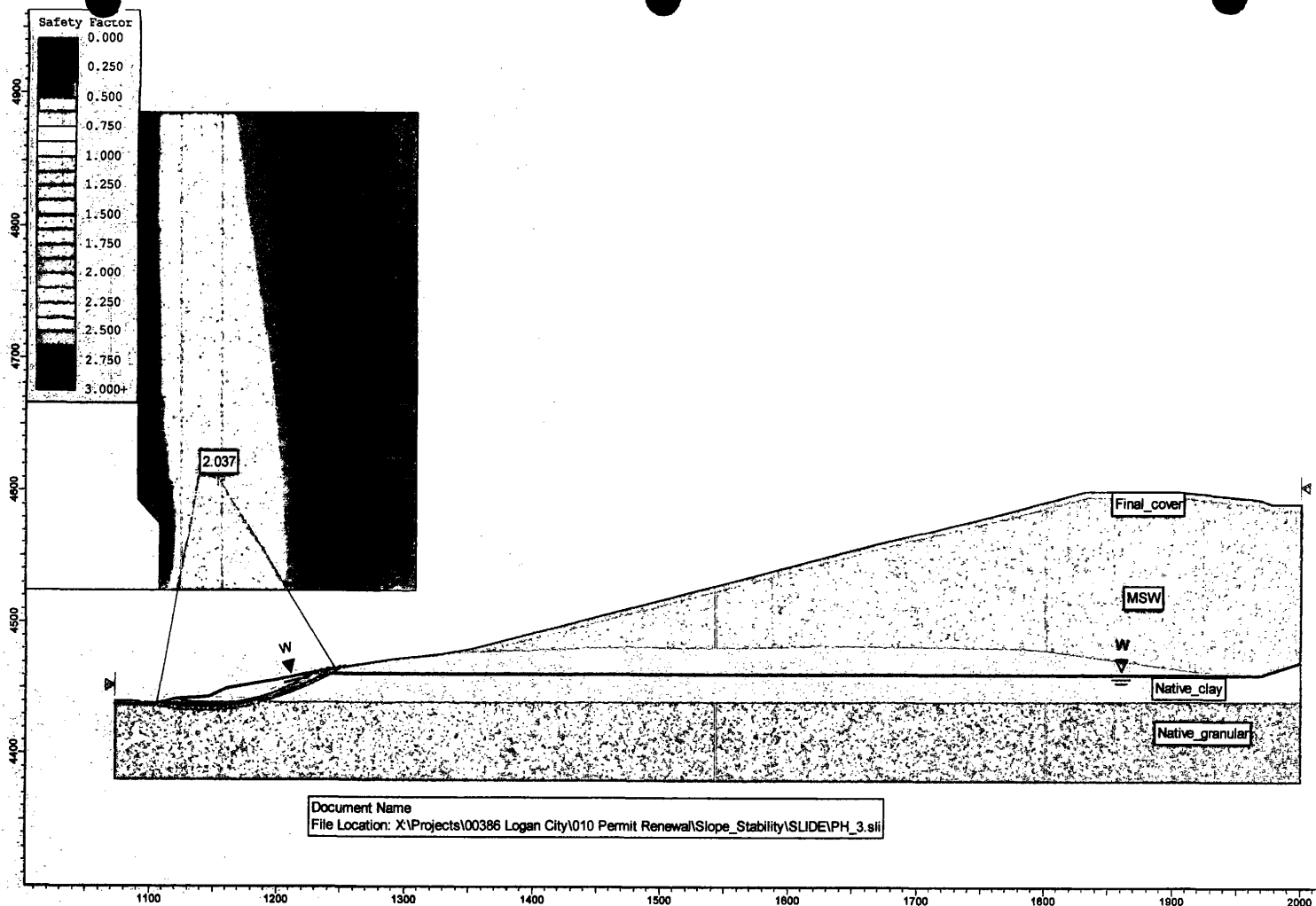


Phase 1 - Static stability

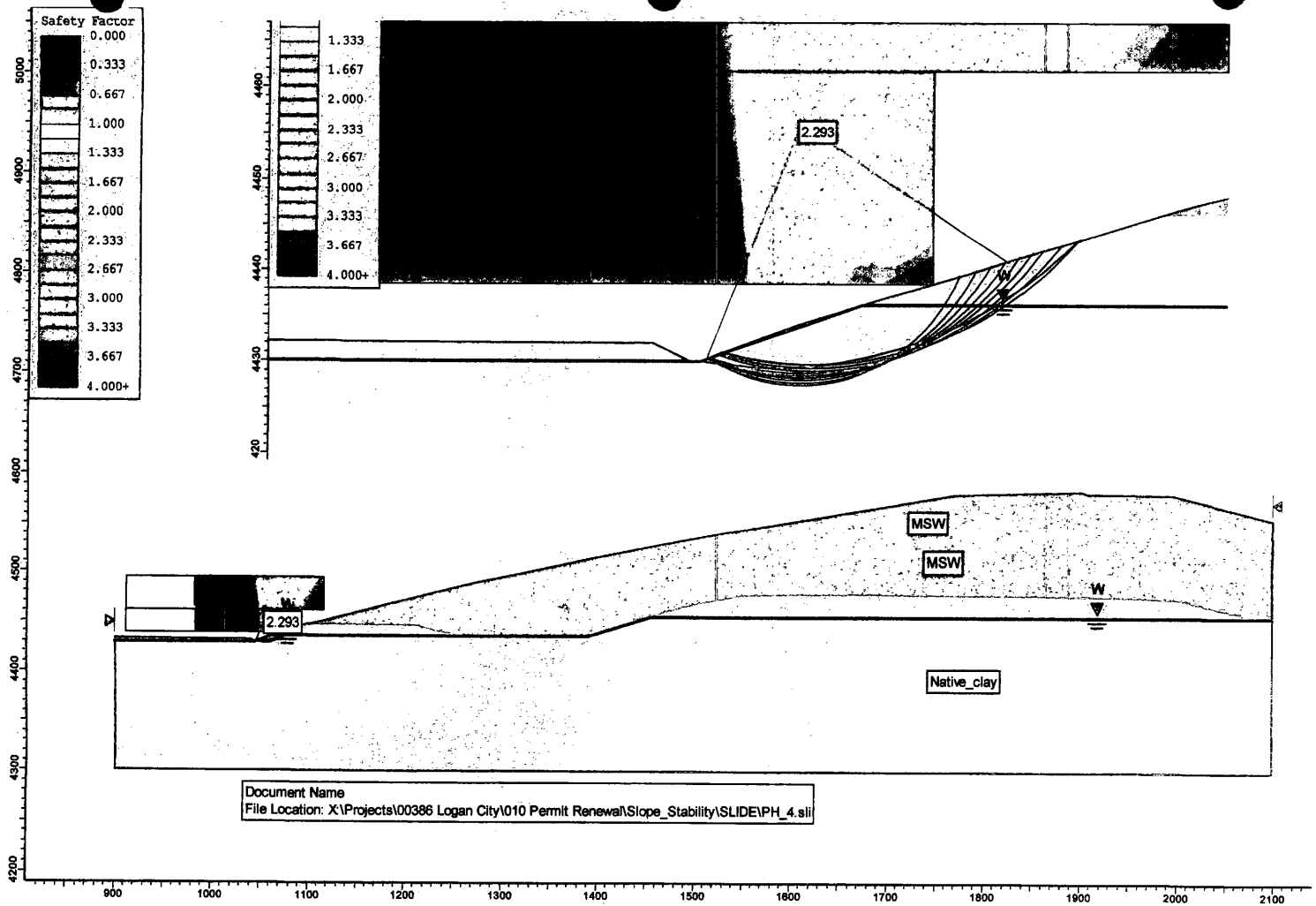


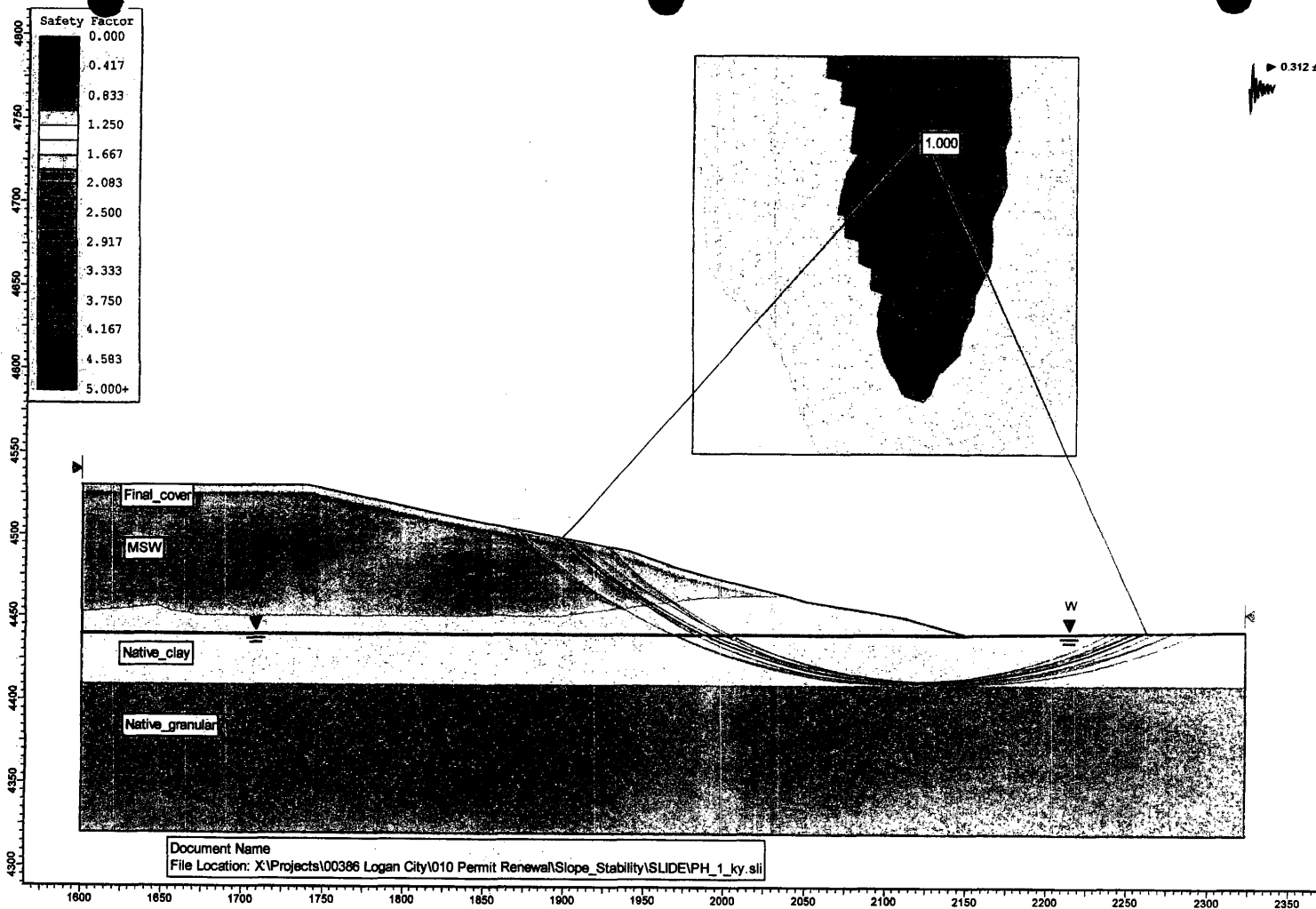
Phase 2 - Static stability

Plate  
N-4



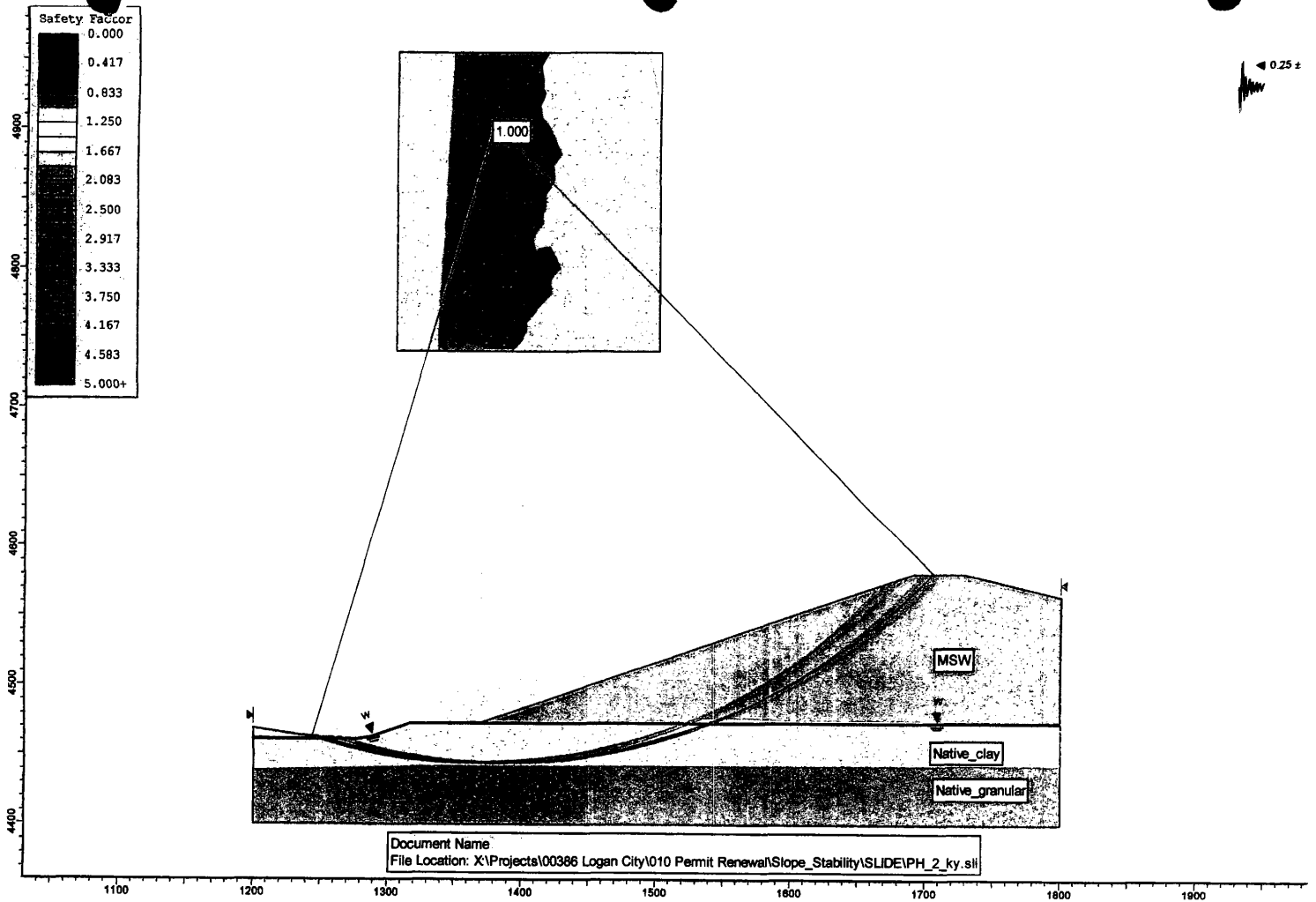
Phase 3 - Static stability





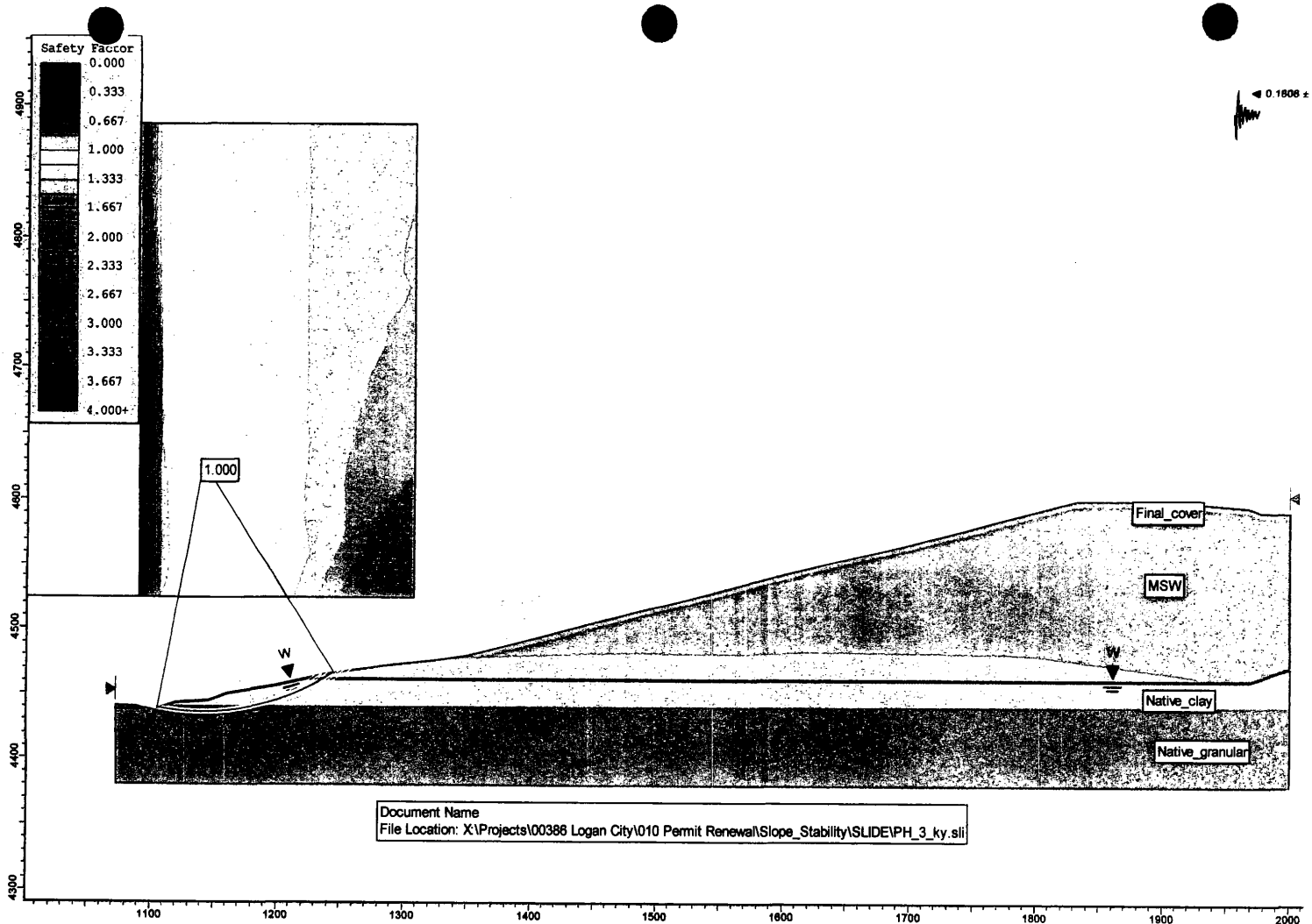
Phase 1 - Pseudostatic stability,  $k_y = 0.312$

Plate  
N-7



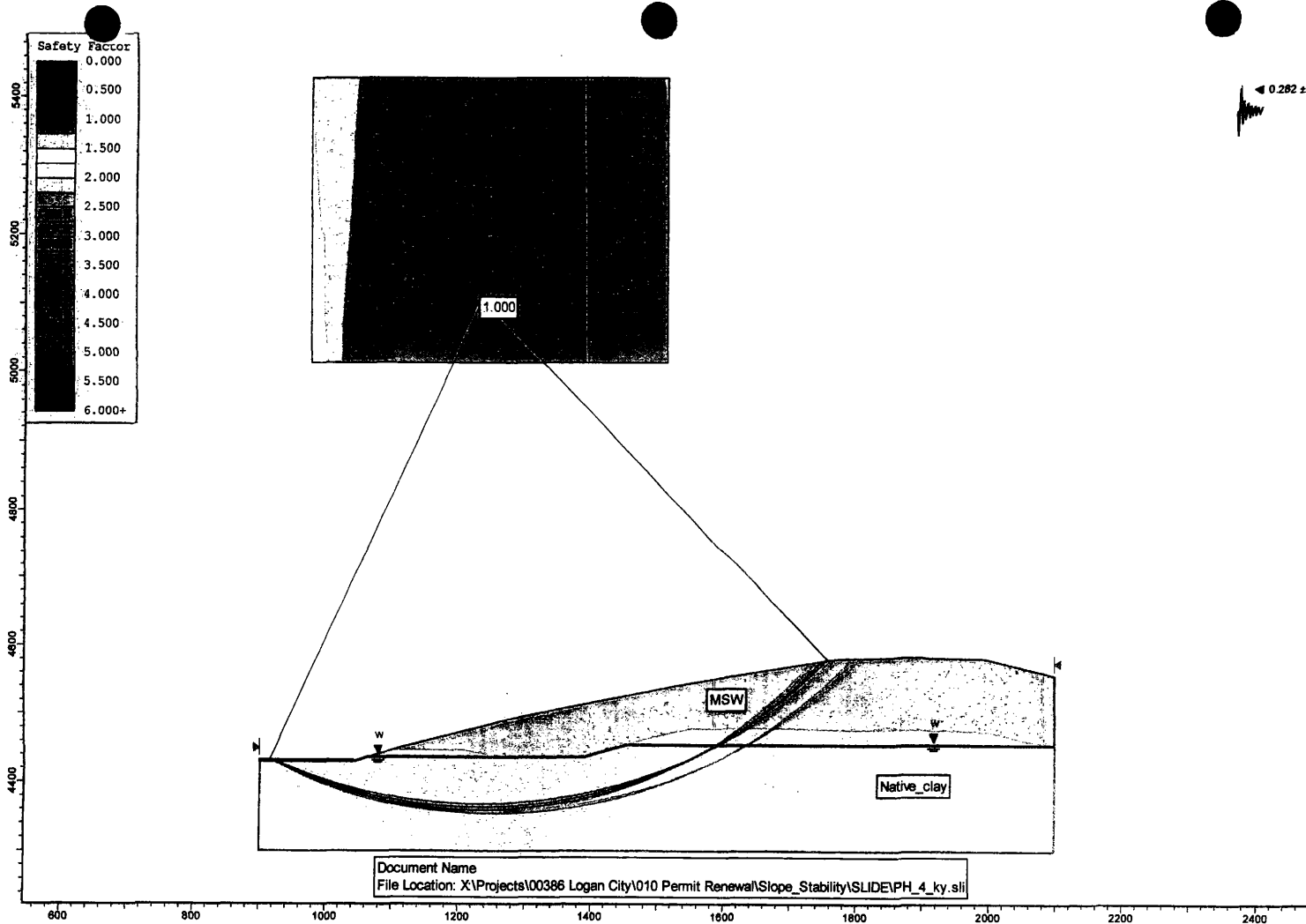
Phase 2 - Pseudostatic stability,  $k_y = 0.250$

Plate  
N-8



Phase 3 - Pseudostatic stability,  $k_y = 0.181$

Plate  
N-9



Phase 4 - Pseudostatic stability,  $k_y = 0.282$

Plate  
N-10

## **Simplified Seismic Slope Displacement**

after Bray et al. (1998) and referenced in SCEC (2002) with sliding length modification option suggested by Rathje & Bray (2006) unpublished

Project: **Logan City Landfill**

Number: **00386-010**

Model:

Phase 1	Phase 2	Phase 3	Phase 4
7.3	7.3	7.3	7.3
0.43	0.43	0.43	0.43
6.8	6.8	6.8	6.8
18.11	18.11	18.11	18.11

Mw =

MHA (g) =

r (km) =

(D5-95)med, (sec) =

Slope deformation analysis

Shear wave velocity, Vs (ft/sec) =

Maximum vertical distance, H (ft) =

Yield acceleration, ky (g) =

Period of sliding mass, Ts (sec) =

Mean period of eq, Tm (sec) =

Ts/Tm =

MHEA/(MHA<sup>r</sup>\*NRF)mean =

Bray et al. (1998)

MHEA or MHEA red. = Kmax =

Ky/Kmax =

Norm. disp. (mm/sec) =

U median (mm) =

U median (cm) =

U median (in.) =

700	700	700	700
41.6	56.9	14.3	7.06
0.312	0.250	0.181	0.282
0.24	0.33	0.08	0.04
0.530	0.530	0.530	0.530
0.449	0.614	0.154	0.076
1.000	0.785	1.000	1.000
0.42	0.33	0.42	0.42
0.75	0.76	0.43	0.67
1.89	1.67	23.3	3.37
14	10	176	26
1.4	1.0	17.6	2.6
0.6	0.4	6.9	1.0

Fault name/ID = East Cache fault zone, northern  
section/2352a

### **Reference:**

Bray et al. (1998). "Simplified seismic design procedures for geosynthetic-lined solid-waste landfills" *Geosynthetics International* Vol. 5, NO.1-2

SCEC (2002). *Recommended procedures for implementation of analyzing and mitigating landslide hazards in California*

## Infinite Slope Yield Acceleration Determination

Project: **Logan City Landfill**

Number: **00386-010**

Model:

Bentomat ST	Bentomat ST/Geocomposite drainage layer	Bentomat ST/Site soil	Proposed final cover soil
4.0	4.0	4.0	4.0
110.0	110.0	110.0	110.0
34.9	23.0	29.5	30.0
280.0	79.0	25.0	0.0
14.0	14.0	14.0	14.0
5.509	2.467	2.511	2.316

Thickness,  $H$  (ft) =

Unit weight,  $\gamma$  (pcf) =

Friction angle,  $\phi$  (deg) =

Cohesion intercept,  $c$  (psf) =

Slope angle,  $\beta$  (deg) =

Static factor of safety,  $FS$  =

$$FS = \frac{\tan \phi}{\tan \beta} + \frac{c}{\gamma H \cos \beta \sin \beta}$$

Yield acceleration,  $k_y$  (g) =

**0.958    0.331    0.330    0.287**

$$k_y = \tan(\phi - \beta) + \frac{c}{\gamma H \cos^2 \beta (1 + \tan \phi \tan \beta)}$$

## **Simplified Seismic Slope Displacement**

after Bray et al. (1998) and referenced in SCEC (2002) with sliding length modification option suggested by Rathje & Bray (2006) unpublished

Project: **Logan City Landfill**  
Number: **00386-010**

Model:

Bentomat ST	Bentomat ST/Geocomposite drainage	Bentomat ST/Site soil	Proposed final cover soil
7.3	7.3	7.3	7.3
0.43	0.43	0.43	0.43
6.8	6.8	6.8	6.8
18.11	18.11	18.11	18.11

Mw =

MHA (g) =

r (km) =

(D5-95)med, (sec) =

Slope deformation analysis

Shear wave velocity, Vs (ft/sec) =

Maximum vertical distance, H (ft) =

Yield acceleration, ky (g) =

Period of sliding mass, Ts (sec) =

Mean period of eq, Tm (sec) =

Ts/Tm =

MHEA/(MHA<sub>r</sub>\*NRF)mean =

Bray et al. (1998)

MHEA or MHEA red. = Kmax =

Ky/Kmax =

Norm. disp. (mm/sec) =

U median (mm) =

U median (cm) =

U median (in.) =

700	700	700	700
4.12	4.12	4.12	4.12
0.958	0.331	0.330	0.287
0.02	0.02	0.02	0.02
0.530	0.530	0.530	0.530
0.044	0.044	0.044	0.044
1.000	1.000	1.000	1.000
0.42	0.42	0.42	0.42
2.29	0.79	0.79	0.69
0	1.31	1.33	3.06
0	10	10	23
<b>0.0</b>	<b>1.0</b>	<b>1.0</b>	<b>2.3</b>
0.0	0.4	0.4	0.9

Fault name/ID = East Cache fault zone, northern  
section/2352a

### **Reference:**

Bray et al. (1998). "Simplified seismic design procedures for geosynthetic-lined solid-waste landfills" *Geotextiles International* Vol. 5, NO.1-2  
SCEC (2002). *Recommended procedures for implementation of analyzing and mitigating landslide hazards in California*



# 2007 LANDFILL LIFE

YEAR	PROJECTED ANNUAL MSW WASTE USE (TONS)	PROJECTED ANNUAL C&D WASTE USE (TONS)	PROJECTED TOTAL WASTE USE (TONS)	PROJECTED ANNUAL COMPACTION (LBS/CY)	PROJECTED ANNUAL MSW (CY)	PROJECTED ANNUAL C&D (CY)	TOTAL REFUSE VOLUME (CY)	PROJECTED ANNUAL SOIL USE (CY)	TOTAL SOIL USE (CY)	ANNUAL AIRSPACE CONSUMED (CY)	CUMULATIVE AIRSPACE CONSUMED (CY)	PREDICTED LANDFILL CAPACITY (CY)	UPDATED LANDFILL CAPACITY (CY)
ADDITIONAL BASE VOLUME* SURVEY VOLUME												740,740	
1960	3,746	0	3,746	975	7,684		7,684	2,536	2,536	10,220	10,220	10,714,066	
1961	3,818	0	3,818	975	7,832		15,516	2,584	5,120	10,416	20,636	11,454,806	
1962	4,279	0	4,279	975	8,777		24,293	2,897	8,017	11,674	32,310	11,432,716	
1963	4,755	0	4,755	975	9,754		34,047	3,219	11,236	12,973	45,283	11,419,743	
1964	5,245	0	5,245	975	10,759		44,806	3,550	14,786	14,309	59,592	11,405,434	
1965	5,749	0	5,749	975	11,793		56,599	3,892	18,678	15,684	75,277	11,389,749	
1966	6,477	0	6,477	975	13,286		69,885	4,384	23,062	17,671	92,947	11,372,079	
1967	7,226	0	7,226	975	14,823		84,708	4,891	27,954	19,714	112,661	11,352,365	
1968	7,997	0	7,997	975	16,404		101,112	5,413	33,367	21,817	134,479	11,330,547	
1969	8,789	0	8,789	975	18,029		119,141	5,949	39,316	23,978	158,457	11,306,569	
1970	9,603	0	9,603	975	19,698		138,839	6,500	45,817	26,199	184,656	11,280,370	
1971	10,481	0	10,481	975	21,499		160,338	7,095	52,912	28,594	213,250	11,251,776	
1972	11,385	0	11,385	975	23,354		183,692	7,707	60,618	31,061	244,311	11,220,715	
1973	12,317	0	12,317	975	25,266		208,958	8,338	68,956	33,603	277,914	11,187,112	
1974	13,275	0	13,275	975	27,231		236,189	8,986	77,942	36,217	314,131	11,150,895	
1975	29,702	0	29,702	975	60,927		297,116	20,106	98,048	81,033	395,164	11,069,862	
1976	31,868	0	31,868	975	65,370		362,486	21,572	119,620	86,942	482,107	10,982,919	
1977	34,091	0	34,091	975	69,930		432,416	23,077	142,697	93,007	575,114	10,889,912	
1978	36,373	0	36,373	975	74,611		507,028	24,622	167,319	99,233	674,347	10,790,679	
1979	38,714	0	38,714	975	79,413		586,441	26,206	193,526	105,620	779,967	10,685,059	
1980	41,113	0	41,113	975	84,334		670,775	27,830	221,356	112,165	892,131	10,572,895	
1981	43,795	0	43,795	975	89,836		760,611	29,646	251,002	119,482	1,011,613	10,453,413	
1982	46,533	0	46,533	975	95,493		856,105	31,513	282,515	127,006	1,138,619	10,326,407	
1983	49,388	0	49,388	975	101,309		957,413	33,432	315,946	134,741	1,273,360	10,191,666	
1984	52,299	0	52,299	975	107,280		1,064,693	35,402	351,349	142,682	1,416,042	10,048,984	
1985	55,288	0	55,288	975	113,411		1,178,105	37,426	388,775	150,837	1,566,879	9,898,147	
1986	58,353	0	58,353	975	119,698		1,297,803	39,500	428,275	159,199	1,726,078	9,738,948	
1987	61,494	0	61,494	975	126,142		1,423,945	41,627	469,902	167,768	1,893,846	9,571,180	
1988	64,531	0	64,531	975	132,371		1,556,316	43,683	513,584	176,054	2,069,900	9,393,126	
1989	67,900	0	67,900	975	139,282		1,695,598	45,963	559,547	185,245	2,255,145	9,209,881	
1990	71,378	0	71,378	975	146,416		1,842,014	48,317	607,865	194,734	2,449,879	9,015,147	
1991	74,968	0	74,968	975	153,781		1,995,795	50,748	658,612	204,528	2,654,407	8,810,619	
1992	77,317	0	77,317	975	158,599		2,154,394	52,338	710,950	210,937	2,865,344	8,599,682	
1993	77,825	0	77,825	975	159,641		2,314,035	52,682	763,632	212,323	3,077,666	8,387,359	
1994	60,781	12,521	73,302	975	124,679	12,521	2,438,714	41,144	804,776	178,344	3,256,010	8,209,016	
1995	67,315	13,867	81,182	975	138,082	13,867	2,576,796	43,567	850,343	187,516	3,443,526	8,011,500	
1996	70,061	14,433	84,494	975	143,715	14,433	2,720,511	47,426	897,769	205,573	3,649,100	7,805,926	
1997	75,232	15,498	90,730	975	154,322	15,498	2,874,833	50,926	948,695	220,746	3,869,846	7,585,180	
1998	79,143	16,303	95,446	975	162,345	16,303	3,037,177	53,574	1,002,269	232,222	4,102,068	7,352,958	
1999	81,383	16,765	98,148	975	166,939	16,765	3,204,117	55,090	1,057,359	238,794	4,340,862	7,114,164	
2000	80,156	16,512	96,668	975	164,423	16,512	3,368,539	54,259	1,111,618	233,194	4,586,056	6,878,970	
2001	86,013	17,719	103,732	975	176,437	17,719	3,544,976	55,287	1,166,905	229,443	4,815,499	6,649,527	
2002	89,454	18,427	107,881	1350	132,524	18,427	3,677,500	26,505	1,193,410	177,456	4,992,955	6,472,071	
2003	93,032	19,165	112,196	1350	137,825	19,165	3,815,325	27,565	1,220,975	184,554	5,177,509	6,287,517	
2004	96,753	19,931	116,684	1350	143,338	19,931	3,958,662	28,668	1,249,643	191,936	5,369,445	6,095,580	
2005	100,623	20,728	121,351	1350	149,071	20,728	4,107,734	29,814	1,279,457	199,614	5,569,059	5,895,967	
2006	104,648	21,557	126,205	1350	155,034	21,557	4,260,768	31,007	1,290,464	207,598	5,776,658	5,688,368	5,819,115
2007	108,117	22,311	130,428	1350	161,000	22,311	4,413,079	32,218	1,302,682	215,716	5,992,374	5,472,652	
2008	111,215	23,065	134,280	1350	166,977	23,065	4,565,144	33,449	1,315,131	223,834	6,216,208	5,248,818	
2009	114,044	23,819	137,863	1350	172,954	23,819	4,717,063	34,689	1,327,820	231,952	6,448,160	5,016,866	
2010	116,713	24,573	141,286	1350	178,931	24,573	4,868,636	35,929	1,340,749	240,070	6,688,230	4,786,796	
2011	119,322	25,327	144,649	1350	184,908	25,327	5,019,963	37,169	1,353,918	248,188	6,936,418	4,558,608	
2012	121,871	26,081	147,952	1350	190,885	26,081	5,170,844	38,409	1,367,327	256,306	7,192,724	4,330,292	
2013	124,360	26,835	151,195	1350	196,862	26,835	5,321,309	39,649	1,380,976	264,424	7,457,148	4,103,960	
2014	126,799	27,589	154,388	1350	202,839	27,589	5,471,768	40,889	1,394,865	272,542	7,730,690	3,879,418	
2015	129,188	28,343	157,531	1350	208,816	28,343	5,621,911	42,129	1,408,994	280,660	8,011,350	3,655,756	
2016	131,527	29,097	160,624	1350	214,793	29,097	5,772,054	43,369	1,423,363	288,778	8,290,128	3,432,978	
2017	133,816	29,851	163,667	1350	220,770	29,851	5,922,197	44,609	1,438,072	296,896	8,587,024	3,211,082	
2018	136,055	30,605	166,660	1350	226,747	30,605	6,072,340	45,849	1,453,021	305,014	8,892,038	2,990,068	
2019	138,244	31,359	169,603	1350	232,724	31,359	6,222,483	47,089	1,468,110	313,132	9,205,170	2,770,934	
2020	140,393	32,113	172,506	1350	238,701	32,113	6,372,626	48,329	1,483,439	321,250	9,526,420	2,554,684	
2021	142,492	32,867	175,359	1350	244,678	32,867	6,522,769	49,569	1,498,998	329,368	9,852,788	2,343,316	
2022	144,541	33,621	178,162	1350	250,655	33,621	6,672,912	50,809	1,514,807	337,486	10,184,274	2,137,830	
2023	146,540	34,375	180,915	1350	256,632	34,375	6,823,055	52,049	1,530,856	345,604	10,529,878	1,938,226	
2024	148,489	35,129	183,618	1350	262,609	35,129	6,973,198	53,289	1,547,145	353,722	10,883,600	1,744,504	
2025	150,388	35,883	186,271	1350	268,586	35,883	7,123,341	54,529	1,563,674	361,840	11,245,440	1,555,664	
2026	152,237	36,637	188,874	1350	274,563	36,637	7,273,484	55,769	1,580,443	369,958	11,615,398	1,372,706	
2027	154,036	37,391	191,427	1350	280,540	37,391	7,423,627	56,999	1,597,442	378,076	12,003,474	1,197,630	
2028	155,785	38,145	193,930	1350	286,517	38,145	7,573,770	58,239	1,614,681	386,194	12,409,668	1,031,436	
2029	157,484	38,899	196,383	1350	292,494	38,899	7,723,913	59,479	1,632,160	394,312	12,834,080	874,542	
2030	159,133	39,653	198,786	1350	298,471	39,653	7,874,056	60,719	1,649,879	402,430	13,286,510	726,112	
2031	160,732	40,407	201,139	1350	304,448	40,407	8,024,199	61,959	1,667,928	410,548	13,766,058	584,160	
2032	162,281	41,161	203,442	1350	310,425	41,161	8,174,342	63,199	1,686,117	418,666	14,274,724	447,784	
2033	163,780	41,915	205,695	1350	316,402	41,915	8,324,485	64,439	1,704,556	426,784	14,811,508	317,832	
2034	165,229	42,669	207,898	1350	322,379	42,669	8,474,628	65,679	1,723,235	434,902	15,386,410	198,920	
2035	166,728	43,423	210,151	1350	328,356	43,423	8,624,771	66,919	1,742,154	443,020	15,999,430	88,968	
2036	168,177	44,177	212,354	1350	334,333	44,177	8,774,914	68,159	1,761,303	451,138	16,650,568	-12,824	
2037	169,626	44,931	214,557	1350	340,310	44,931	8,925,057	69,399	1,780,702	459			

**APPENDIX P**

# CLOSURE COSTS (IMMEDIATE CLOSURE)

## Section 1.0 - Engineering

### CLOSURE NOW

ESTIMATED DATE OF CLOSURE = NOW  
APPROXIMATE CLOSURE AREA = 4,100,000

Item	Description	Unit Measure	Cost/Unit	No. Units	Total Cost
1.1	Topographic Survey	LS	\$7,500	1	\$7,500
1.2	Boundary Survey for Closure	NA			
1.3	Site Evaluation	LS	\$2,500	1	\$2,500
1.4	Development of Plans	LS	\$25,000	1	\$25,000
1.5	Contract Administration - (Bidding and Award)	LA	\$7,500	1	\$7,500
1.6	(Certification of Final Cover and Closure Notice)	LS	\$10,000	1	\$10,000
1.7	Project Management - (Construction Observation and Testing)	LS	\$40,000	1	\$40,000
1.8	Monitor Well Consultant Cost	NA			\$0
1.9	Other Environmental Permit Costs	NA			\$0
Engineering Subtotal					\$92,500

## Section 2.0 - Construction

### CLOSURE NOW

Item	Description	Unit Measure	Cost/Unit	No. Units	Total Cost
2.1	Final Cover System				
2.1.1	Site Preparation/ Site Regrading	ACRE	\$1,500	94.1	\$141,185
2.1.2	Gas Collection Layer/Pipes	NA			\$0
2.1.3	Low permeability Layer (Soil - If Applicable)				
a	Soil Purchase	NA			\$0
b	Soil Processing (load)	CY	\$1.00	227,778	\$227,778
c	Soil Transportation	CY	\$2.00	227,778	\$455,556
d	Soil Placement	CY	\$1.00	227,778	\$227,778
e	Soil Amendment (compact)	CY	\$7.00	227,778	\$1,594,444
2.1.4	Low permeability Layer (Synthetic - If Applicable)				
a	Geotextile	NA			\$0
b	GCL	NA			\$0
c	Geomembrane	NA			\$0
2.1.5	Drainage Layer (Soil - If Applicable)				
a	Geotextile	NA			\$0
b	Sand/Gravel	NA			\$0
2.1.6	Drainage Layer (Synthetic - If Applicable)				
a	Geotextile	NA			\$0
b	Geonet/Geocomposite	NA			\$0
2.1.7	Erosion Protection Soil Layer				
a	Soil Purchase	NA			\$0
b	Soil Processing (load)	CY	\$1.00	227,778	\$227,778
c	Soil Transportation	CY	\$2.00	227,778	\$455,556
d	Soil Placement	CY	\$1.00	227,778	\$227,778
e	Soil Amendment (compact)	CY			\$0
2.1.8	Topsoil Layer				
a	Soil Purchase	NA			\$0
b	Soil Processing (load)	CY	\$1.00	75,926	\$75,926
c	Soil Transportation	CY	\$2.00	75,926	\$151,852
d	Soil Placement	CY	\$1.00	75,926	\$75,926
e	Soil Amendment	NA			\$0
2.1.9	Revegetation				
a	Seeding	ACRE	\$1,200	94.1	\$112,948
b	Fertilizing	ACRE	\$500	94.1	\$47,062
c	Mulch	ACRE	\$200	94.1	\$18,825
d	Tacifier	ACRE	\$200	94.1	\$18,825
2.2	Stormwater Protection Structures				
a	Culverts	EA	\$1,500	6	\$9,000
b	Pipes	NA	\$2,400	5	\$12,000
c	Ditches/Berms	FT	\$12,000	5	\$60,000
d	Detention Basins	NA			\$0
2.3	Gas Collection System				
a	Design	NA			\$0
b	Additional Equipment / Installation	NA			\$0
2.4	Leachate Collection System				
a	Design	NA			\$0
b	Additional Equipment / Installation	NA			\$0
2.5	Groundwater Monitoring System				
a	Monitor Well Installation	NA			\$0
b	Monitor Well Abandonment	NA			\$0
2.6	Site Security				
a	Lighting, signs, etc...	NA			\$0
b	Fencing and Gates	NA			\$0
2.7	Miscellaneous				
a	Performance Bonds	LS	\$10,000	1	\$10,000
b	Contract/Legal fees	LS	\$5,000	1	\$5,000
Construction Subtotal					\$4,155,213

LS - LUMP SUM  
NA - NOT APPLICABLE  
EA - EACH  
CY - CUBIC YARD  
FT - FEET

Total \$4,247,713  
10% Contingency \$424,771  
Subtotal Closure Cost \$4,672,485

Total	\$1,232,719
10% Contingency	\$123,272
Subtotal Closure Cost	\$1,355,991
Inflation Factor 1.3458	
Inflated Closure Cost (2% Inflation)	\$1,824,893

Total	\$698,780
10% Contingency	\$69,878
Subtotal Closure Cost	\$768,658
Inflation Factor 1.5459	
Inflated Closure Cost (2% inflation)	\$1,188,268

# POST-CLOSURE COSTS (30 YEARS)

## Section 1.0 - Engineering

Item	Description	Unit Measure	Cost/Unit	No. Units	Total Cost
1.1	Post-Closure Plan	LS	\$5,000	1	\$5,000
1.2	Annual Report (including results from gas, leachate, and ground water sampling - details of maintenance performed)	LS	\$5,000	30	\$150,000
a	Semiannual Site Inspections	LS	\$400	60	\$24,000
b	Plan Update	LS	\$200	30	\$6,000
Engineering Subtotal					\$185,000

## Section 2.0 - Gas Collection System - Sampling

Item	Description	Unit Measure	Cost/Unit	No. Units	Total Cost
2.1	Sample Collection	LS	\$250	60	\$15,000
2.2	Sample Analysis	NA			\$0
2.3	Report (Part of Annual Report)				
Gas Collection System - Sampling Subtotal					\$15,000

## Section 3.0 - Leachate Collection System - Sampling

Item	Description	Unit Measure	Cost/Unit	No. Units	Total Cost
2.1	Sample Collection	NA			\$0
2.2	Sample Analysis	NA			\$0
2.3	Report (Part of Annual Report)				
Leachate Collection System - Sampling Subtotal					\$0

## Section 4.0 - Ground Water Monitoring System - Sampling

Item	Description	Unit Measure	Cost/Unit	No. Units	Total Cost
3.1	Sample Collection	LS	\$960	60	\$57,600
3.2	Sample Analysis	LS	\$7,000	60	\$420,000
3.3	Report (Part of Annual Report)				
Ground Water Collection System - Sampling Subtotal					\$477,600

## Section 5.0 - Facility Operations and Maintenance

Item	Description	Unit Measure	Cost/Unit	No. Units	Total Cost
4.1	Cover				
a	Soil Replacement	LS	\$1,000	30	\$30,000
b	Vegetation/Reseeding	LS	\$500	30	\$15,000
4.2	Storm Water Protection Structures				
a	Ditch and Culvert Maintenance	LS	\$500	30	\$15,000
b	Berm and Basin Maintenance	LS	\$500	30	\$15,000
4.3	Gas Collection System				
a	System Operation	NA		30	\$0
b	System Repair	LS	\$200	30	\$6,000
4.4	Leachate Collection System				
a	System Operation	NA		30	\$0
b	System Repair	NA		30	\$0
4.5	Ground Water Monitoring System				
a	System Operation	NA		30	\$0
b	System Repair	LS	\$500	30	\$15,000
4.6	Site Security				
a	Lighting, signs, etc...	LS	\$500	30	\$15,000
b	Fencing and Gates	LS	\$500	30	\$15,000
4.7	Miscellaneous				
a					
b					
Facility Operations and Maintenance Subtotal					\$126,000

Total \$803,600  
 10% Contingency \$80,360  
 Total Post-Closure Cost \$883,960